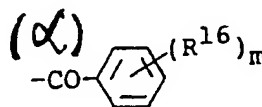
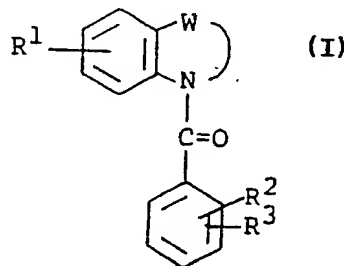




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<p>(21) International Application Number: PCT/JP90/01340</p> <p>(22) International Filing Date: 18 October 1990 (18.10.90)</p> <p>(30) Priority data:</p> <table border="0"> <tr> <td>1/274338</td> <td>20 October 1989 (20.10.89)</td> <td>JP</td> </tr> <tr> <td>2/66063</td> <td>15 March 1990 (15.03.90)</td> <td>JP</td> </tr> <tr> <td>2/105580</td> <td>20 April 1990 (20.04.90)</td> <td>JP</td> </tr> <tr> <td>2/181858</td> <td>9 July 1990 (09.07.90)</td> <td>JP</td> </tr> </table> <p>(71) Applicant (for all designated States except US): OTSUKA PHARMACEUTICAL COMPANY, LIMITED [JP/JP]; 9, Kandatsukasa-cho 2-chome, Chiyoda-ku, Tokyo 101 (JP).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only) : OGAWA, Hidenori [JP/JP]; MIYAMOTO, Hisashi [JP/JP]; 21-3, Yoshinari-Aza-Todoroki, Ojin-cho, Tokushima-shi, Tokushima 771-11 (JP). KONDO, Kazumi [JP/JP]; 19-27, Okuwajima-Aza-Suberuiwahama, Muya-cho, Naruto-shi, Tokushima 772 (JP). YAMASHITA, Hiroshi [JP/JP]; 57-1, Sasakino-Aza-Hachikami, Matsushige-cho, Itano-gun, Tokushima 771-02 (JP). NAKAYA, Kenji [JP/JP]; 48, Kamibetsukukita, Kawauchi-cho, Tokushima-shi, Tokushima 771-01 (JP). KOMATSU, Hajime [JP/JP]; TANAKA, Michinori [JP/JP]; KORA, Shinya [JP/JP]; 463-10, Kagasuno, Kawauchi-cho, Tokushima-shi, Tokushima 771-01 (JP). TOMINAGA, Michiaki [JP/JP];</p>		1/274338	20 October 1989 (20.10.89)	JP	2/66063	15 March 1990 (15.03.90)	JP	2/105580	20 April 1990 (20.04.90)	JP	2/181858	9 July 1990 (09.07.90)	JP	<p>310-6, Takaiso, Kamiita-cho, Itano-gun, Tokushima 771-13 (JP). YABUUCHI, Yoichi [JP/JP]; 900-25, Omatsu, Kawauchi-cho, Tokushima-shi, Tokushima 771-01 (JP).</p> <p>(74) Agents: AOYAMA, Tamotsu et al.; Twin 21 Mid Tower, 1-61, Shiromi 2-chome, Chuo-ku, Osaka-shi, Osaka 540 (JP).</p> <p>(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), KR, LU (European patent), NL (European patent), SE (European patent), US.</p> <p>Published With international search report.</p>
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(54) Title: BENZOHETEROCYCLIC COMPOUNDS



(57) Abstract

Novel benzoheterocyclic compounds of formula (I), wherein R¹ is H, halogen, alkyl, optionally substituted amino, alkoxy; R² is H, halogen, alkoxy, phenylalkoxy, OH, alkyl, optionally substituted amino, carbamoyl-alkoxy, optionally substituted amino-alkoxy, optionally substituted benzoyloxy; R³ is a group: -NR⁴R⁵ or -CO-NR¹¹R¹²; R⁴ is H, optionally substituted benzoyl, alkyl; R⁵ is a group α [R¹⁶ is halogen, optionally substituted alkyl, OH, alkoxy, alkanoyloxy, alkylthio, alkanoyl, carboxy, alkoxy-carbonyl, CN, NO₂, optionally substituted amino, phenyl, cycloalkyl, etc., or a group: -O-A-NR⁶R⁷; m is 0 to 3], phenyl-alkoxycarbonyl, alkanoyl, phenyl-alkanoyl, etc.; R¹¹ is H or alkyl; R¹² is cycloalkyl or optionally substituted phenyl; and W is a group: -(CH₂)_p (p is 3 to 5) or -CH=CH-(CH₂)_q (q is 1 to 3), the carbon atom of these groups being optionally replaced by O, S, SO, SO₂ or a group: -N(R¹³)- and further these groups having optionally 1 to 3 substituents of alkyl, alkoxy-carbonyl, carboxy, OH, O, alkanoyloxy, etc., which have excellent vasopressin antagonistic activities and are useful as vasodilator, hypotensive agent, water diuretics, platelet agglutination inhibitor, and a vasopressin antagonistic composition containing the compound as the active ingredient.

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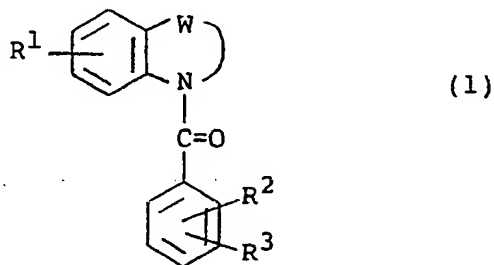
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BENZOHETEROCYCLIC COMPOUNDSTechnical Field

This invention relates to novel benzoheterocyclic compounds which have excellent vasopressin antagonistic activities and are useful as vasodilator, hypotensive agent, water diuretics, platelet aggregation inhibitor.

Disclosure of the Invention

The benzoheterocyclic compounds of this invention have the following formula:



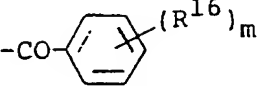
wherein R^1 is hydrogen atom, a halogen atom, a lower alkyl, an amino having optionally a lower alkyl substituent, or a lower alkoxy,


R^2 is hydrogen atom, a halogen atom, a lower alkoxy, a phenyl(lower)alkoxy, hydroxy, a lower alkyl, an amino having optionally a lower alkyl substituent, a carbamoyl-substituted lower alkoxy, an amino-substituted lower alkoxy having optionally a lower alkyl substituent, or a benzyloxy which has optionally a halogen substituent on the phenyl ring,

R^3 is a group of the formula: $-N \begin{smallmatrix} R^4 \\ R^5 \end{smallmatrix}$ or a group of

the formula: $-C \begin{smallmatrix} O \\ || \end{smallmatrix} N \begin{smallmatrix} R^{11} \\ R^{12} \end{smallmatrix}$,

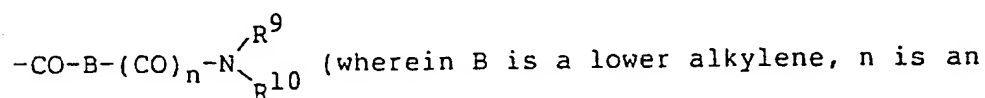
R^4 is hydrogen atom, a benzoyl which has optionally a halogen substituent on the phenyl ring, or a lower alkyl,

R^5 is a group of the formula:  $-CO-C_6H_4(R^{16})_m$
[wherein R^{16} is a halogen atom; a lower alkyl which has optionally a substituent selected from a halogen atom and hydroxy; a lower alkoxy; a lower alkanoyloxy; a lower alkylthio; a lower alkanoyl; carboxy; a lower alkoxy-carbonyl; cyano; nitro; an amino which has optionally a substituent selected from a lower alkyl and a lower alkanoyl; phenyl; a cycloalkyl; a lower alkanoyloxy-substituted lower alkoxy; a carboxy-substituted lower alkoxy; a halogen-substituted lower alkoxy; a carbamoyl-substituted lower alkoxy; a hydroxy-substituted lower alkoxy; a lower alkoxy-carbonyl-substituted lower alkoxy; a phthalimido-substituted lower alkoxy; an aminocarbonyl-lower alkoxy having a lower alkyl substituent; or a group of the

formula:  $-O-A-N \begin{matrix} R^6 \\ R^7 \end{matrix}$ (A is a lower alkylene, and R^6 and R^7 are

the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a lower alkanoyl, or benzoyl, or R^6 and R^7 may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from piperidinyl and a lower alkyl); and m is an integer of 0 to 3], a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-

lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanylcarbonyl, naphthyl-carbonyl, pyridylcarbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula: $\text{-CO-}\langle\text{C}_6\text{H}_4\rangle\text{-N-R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the formula:



integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower

alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl),

R^{11} is hydrogen atom or a lower alkyl,

R^{12} is a cycloalkyl, or a phenyl which has optionally 1 to 3 substituents selected from a lower alkoxy, a lower alkyl and a halogen atom,

W is a group of the formula: $-(CH_2)_p-$ (p is an integer of 3 to 5), or a group of the formula: $-CH=CH-(CH_2)_q-$ (q is an integer of 1 to 3), the carbon atom of these groups: $-(CH_2)_p-$ and $-CH=CH-(CH_2)_q-$ being optionally replaced by oxygen atom, sulfur atom, sulfinyl, sulfonyl, or a group of

the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom, a cycloalkyl, or a lower alkyl), and further said $-(CH_2)_p-$ and $-CH=CH-(CH_2)_q-$ groups having optionally 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxy-carbonyl, carboxy, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkyl sulfonyloxy-lower alkyl, an

azido-lower alkyl, a group of the formula: —O— , an aminocarbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxycarbonyl-substituted lower alkoxy, a carboxy-substituted lower alkoxy, an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxy-imino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula: $\text{R}^{81}\text{—N—CH}_2\text{COO—}$ (R^{81} is hydrogen atom or a lower alkyl),

hydrazino, pyrrolyl, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, a group of the formula: —O—A—CO—N— $\begin{matrix} \text{R}^{82} \\ \diagup \\ \text{N} \\ \diagdown \\ \text{R}^{83} \end{matrix}$ (A is as defined above, and R^{82} and R^{83} are the same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R^{82} and R^{83} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl), and a group of the formula:

$\text{—(CO)}_n\text{—N—}$ $\begin{matrix} \text{R}^{14} \\ \diagup \\ \text{N} \\ \diagdown \\ \text{R}^{15} \end{matrix}$ (wherein n is as defined above, and R^{14} and R^{15}

are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having optionally 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, benzoyl, a lower alkoxy-carbonyl, anilinocarbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxycarbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent on the piperidinyl ring, a halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxycarbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxycarbonyl, or R^{14} and R^{15} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen, wherein the heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl or a lower alkanoyl).

The benzoheterocyclic compounds of the formula (1) and

their salts have excellent vasopressin antagonistic activities and vasodilating activity, hypotensive activity, activity for inhibiting saccharide release in liver, activity for inhibiting growth of mesangium cells, water diuretic activity, platelet agglutination inhibitory activity and are useful as vasodilator, hypotensive agent, water diuretics, platelet agglutination inhibitor and are used for the prophylaxis and treatment of hypertension, edema, ascites, heart failure, renal function disorder, vasopressin parasecretion syndrome (SIADH), hepatocirrhosis, hyponatremia, hypokaliemia, diabetic, circulation disorder, and the like.

Each group in the above formula (1) includes specifically the following groups.

The "lower alkoxy" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms, for example, methoxy, ethoxy, propoxy, isopropoxy, butoxy, tert-butoxy, pentyloxy, hexyloxy, and the like.

The "lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, methyl, ethyl, propyl, isopropyl, butyl, tert-butyl, pentyl, hexyl, and the like.

The "halogen atom" includes fluorine atom, chlorine atom, bromine atom and iodine atome.

The "amino having optionally a lower alkyl substituent" includes an amino having optionally one or two substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, amino,

methlamino, ethylamino, propylamino, isopropylamino, butylamino, tert-butylamino, pentylamino, hexylamino, dimethylamino, diethylamino, dipropylamino, dibutylamino, dipentylamino, dihexylamino, N-methyl-N-ethylamino, N-ethyl-N-propylamino, N-methyl-N-butylamino, N-methyl-N-hexylamino, and the like.

The "lower alkenyl" includes a straight chain or branched chain alkenyl group having 2 to 6 carbon atoms, for example, vinyl, allyl, 2-butenyl, 3-butenyl, 1-methylallyl, 2-pentenyl, 2-hexenyl, and the like.

The "lower alkyl which has optionally a substituent selected from a halogen atom and hydroxy" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which may optionally have 1 to 3 substituents selected from a halogen atom and hydroxy, for example, in addition to the above-mentioned lower alkyl groups, hydroxymethyl, 2-hydroxyethyl, 1-hydroxyethyl, 3-hydroxypropyl, 2,3-dihydroxypropyl, 4-hydroxybutyl, 1,1-dimethyl-2-hydroxyethyl, 5,5,4-trihydroxypentyl, 5-hydroxypentyl, 6-hydroxyhexyl, 1-hydroxyisopropyl, 2-methyl-3-hydroxypropyl, trifluoromethyl, trichloromethyl, chloromethyl, bromomethyl, fluoromethyl, iodomethyl, difluoromethyl, dibromomethyl, 2-chloroethyl, 2,2,2-trifluoroethyl, 2,2,2-trichloroethyl, 3-chloropropyl, 2,3-dichloropropyl, 4,4,4-trichlorobutyl, 4-fluorobutyl, 5-chloropentyl, 3-chloro-2-methylpropyl, 5-bromohexyl, 5,6-dichlorohexyl, and the like.

The "lower alkylene" includes a straight chain or

branched chain alkylene group having 1 to 6 carbon atoms, for example, methylene, ethylene, trimethylene, 2-methyltrimethylene, 2,2-dimethyltrimethylene, 1-methyltrimethylene, methylenemethylene, ethylenemethylene, tetramethylene, penta-methylene, hexamethylene, and the like.

The "lower alkanoyloxy" includes a straight chain or branched chain alkanoyloxy group having 1 to 6 carbon atoms, for example, formyloxy, acetyloxy, propionyloxy, butyryloxy, isobutyryloxy, pentanoyloxy, tert-butylcarbonyloxy, hexanoyloxy, and the like.

The "lower alkylthio" includes a straight chain or branched chain alkylthio group having 1 to 6 carbon atoms, for example, methylthio, ethylthio, propylthio, isopropylthio, butylthio, tert-butylthio, pentylthio, hexylthio, and the like.

The "lower alkanoyl" includes a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, formyl, acetyl, propionyl, butyryl, isobutyryl, pentanoyl, tert-butylcarbonyl, hexanoyl, and the like.

The "lower alkoxycarbonyl" includes a straight chain or branched chain alkoxycarbonyl group having 1 to 6 carbon atoms in the alkoxy moiety, for example, methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl, isopropoxycarbonyl, butoxycarbonyl, tert-butoxycarbonyl, pentyloxycarbonyl, hexyloxycarbonyl, and the like.

The "amino having optionally a substituent selected from a lower alkyl and a lower alkanoyl" includes an amino having optionally one or two substituents selected from a

straight chain or branched chain alkyl group having 1 to 6 carbon atoms and a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, amino, methyl-amino, ethylamino, propylamino, isopropylamino, butylamino, tert-butylamino, pentylamino, hexylamino, dimethylamino, diethylamino, dipropylamino, dibutylamino, dipentylamino, dihexylamino, N-methyl-N-ethylamino, N-ethyl-N-propylamino, N-methyl-N-butylamino, N-methyl-N-hexylamino, N-methyl-N-acetyl-amino, N-acetylamino, N-formylamino, N-propionylamino, N-butyrylamino, N-isobutyrylamino, N-pentanoylamino, N-tert-butylcarbonylamino, N-hexanoylamino, N-ethyl-N-acetylamino, and the like.

The "cycloalkyl" includes a cycloalkyl having 3 to 8 carbon atoms, for example, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, and the like.

The "lower alkanoyloxy-substituted lower alkoxy" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms which is substituted by a straight chain or branched chain alkanoyloxy group having 2 to 6 carbon atoms, for example, acetyloxymethoxy, 2-propionyloxyethoxy, 1-butyryloxyethoxy, 3-acetyloxypropoxy, 4-acetyloxybutoxy, 4-isobutyryloxybutoxy, 5-pentanoyloxypropyloxy, 6-acetyloxyhexyloxy, 6-tert-butylcarbonyloxyhexyloxy, 1,1-dimethyl-2-hexanoyloxyethoxy, 2-methyl-3-acetyloxypropoxy, and the like.

The "carbamoyl-substituted lower alkoxy" includes a carbamoyl-substituted alkoxy group wherein the alkoxy moiety is a straight chain or branched chain alkoxy group having 1 to 6

carbon atoms, for example, carbamoylmethoxy, 2-carbamoylethoxy, 1-carbamoylethoxy, 3-carbamoylpropoxy, 4-carbamoylbutoxy, 5-carbamoylpentyloxy, 6-carbamoylhexyloxy, 1,1-dimethyl-2-carbamoylethoxy, 2-methyl-3-carbamoylpropoxy, and the like.

The "hydroxy-substituted lower alkoxy" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms and having 1 to 3 hydroxy substituents, for example, hydroxymethoxy, 2-hydroxyethoxy, 1-hydroxyethoxy, 3-hydroxypropoxy, 2,3-dihydroxypropoxy, 4-hydroxybutoxy, 3,4-dihydroxybutoxy, 1,1-dimethyl-2-hydroxyethoxy, 5-hydroxypentyloxy, 6-hydroxyhexyloxy, 2-methyl-3-hydroxypropoxy, 2,3,4-trihydroxybutoxy, and the like.

The "lower alkoxy-carbonyl-substituted lower alkoxy" includes an alkoxy-carbonyl-substituted straight chain or branched chain alkoxy group having 1 to 6 carbon atoms wherein the alkoxy-carbonyl moiety is a straight chain or branched chain alkoxy-carbonyl group having 1 to 6 carbon atoms, for example, methoxycarbonylmethoxy, 3-methoxycarbonylpropoxy, ethoxycarbonylmethoxy, 3-ethoxycarbonylpropoxy, 4-ethoxycarbonylbutoxy, 5-isopropoxycarbonylpentyloxy, 6-propoxycarbonylhexyloxy, 1,1-dimethyl-2-butoxycarbonylethoxy, 2-methyl-3-tert-butoxycarbonylpropoxy, 2-pentyloxycarbonylethoxy, hexyloxycarbonylmethoxy, and the like.

The "carboxy-substituted lower alkoxy" includes a carboxy-substituted alkoxy group wherein the alkoxy moiety is a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms, for example, carboxymethoxy, 2-carboxyethoxy, 1-

carboxyethoxy, 3-carboxypropoxy, 4-carboxybutoxy, 5-carboxypentyloxy, 6-carboxyhexyloxy, 1,1-dimethyl-2-carboxyethoxy, 2-methyl-3-carboxypropoxy, and the like.

The "phthalimido-substituted lower alkoxy" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms which is substituted by phthalimido group, for example, phthalimidomethoxy, 2-phthalimidoethoxy, 1-phthalimidoethoxy, 3-phthalimidopropoxy, 4-phthalimidobutoxy, 5-phthalimidopentyloxy, 6-phthalimidohexyloxy, 1,1-dimethyl-2-phthalimidoethoxy, 2-methyl-3-phthalimidopropoxy, and the like.

The "5- or 6-membered saturated heterocyclic group which is formed by binding the groups R^6 and R^7 together with the nitrogen atom to which they bond with or without being intervened with nitrogen or oxygen atom" includes, for example, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, and the like.

The "heterocyclic group having a substituent selected from piperidinyl and a lower alkyl" includes a heterocyclic group having 1 to 3 substituents selected from piperidinyl and a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, 4-methylpiperiazinyl, 3,4-dimethylpiperazinyl, 3-ethylpyrrolidinyl, 2-propylpyrrolidinyl, 3,4,5-trimethylpiperidinyl, 4-butylpiperidinyl, 3-pentylmorpholino, 4-hexylpiperazinyl, 4-(1-piperidinyl)piperidinyl, 3-(1-piperidinyl)pyrrolidinyl, 3-(1-piperidinyl)-4-methylpiperazinyl, 3-(1-piperidinyl)morpholino, and the like.

The "phenyl(lower)alkanoyl" includes a phenylalkanoyl wherein the alkanoyl moiety is a straight chain or branched

chain alkanoyl group having 2 to 6 carbon atoms, for example, phenylacetyl, 3-phenylpropionyl, 2-phenylpropionyl, 4-phenylbutyryl, 2,2-dimethyl-3-phenylpropionyl, 5-phenylpentanoyl, 6-phenylhexanoyl, and the like.

The "cycloalkyl-lower alkanoyl" includes C_3-C_8 cycloalkyl-alkanoyl group wherein the alkanoyl moiety is a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms, for example, cyclohexylacetyl, 3-cyclopropylpropionyl, 2-cyclopentylpropionyl, 4-cyclohexylbutyryl, 2,2-dimethyl-3-cycloheptylpropionyl, 5-cyclooctylpentanoyl, 6-cyclohexylhexanoyl, and the like.

The "cycloalkylcarbonyl" includes a cycloalkylcarbonyl having 3 to 8 carbon atoms, for example, cyclopropylcarbonyl, cyclobutylcarbonyl, cyclopentylcarbonyl, cyclohexylcarbonyl, cycloheptylcarbonyl, cyclooctylcarbonyl, and the like.

The "amino having optionally a lower alkanoyl substituent" includes an amino having optionally a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, amino, formylamino, acetylamino, propionylamino, butyrylamino, isobutyrylamino, pentanoylamino, tert-butylcarbonylamino, hexanoylamino, and the like.

The "phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent" includes a phenoxyalkanoyl group wherein the alkanoyl moiety is a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms and the phenyl ring has optionally 1

to 3 substituents selected from a straight chain or branched chain alkyl having 1 to 6 carbon atoms, a straight chain or branched chain alkoxy having 1 to 6 carbon atoms and an amino having optionally a straight chain or branched chain alkanoyl having 1 to 6 carbon atoms, for example, phenoxyacetyl, 3-phenoxypropionyl, 2-phenoxypropionyl, 4-phenoxybutyryl, 2,2-dimethyl-3-phenoxypropionyl, 5-phenoxy-pentanoyl, 6-phenoxy-hexanoyl, (2-aminophenoxy)acetyl, 3-(4-aminophenoxy)propionyl, (2-methylphenoxy)acetyl, (4-methylphenoxy)acetyl, (3-methylphenoxy)acetyl, (3-methoxyphenoxy)acetyl, (3-acetylamino-phenoxy)acetyl, 4-(2-propionylaminophenoxy)butyryl, 2,2-dimethyl-3-(4-butyrylamino-phenoxy)propionyl, 5-(2-pentanoyl-aminophenoxy)pentanoyl, 6-(4-hexanoylamino-phenoxy)hexanoyl, 3-(2-ethylphenoxy)propionyl, 2-(4-propylphenoxy)propionyl, 4-(4-butylphenoxy)butyryl, 5-(3-pentylphenoxy)pentanoyl, 6-(4-hexylphenoxy)hexanoyl, (2,3-dimethylphenoxy)acetyl, (2,5-dimethylphenoxy)acetyl, (3,4-dimethylphenoxy)acetyl, (3,4,5-trimethylphenoxy)acetyl, 3-(4-methoxyphenoxy)propionyl, 2-(2-propoxyphenoxy)propionyl, 4-(3-butoxyphenoxy)butyryl, 5-(4-pentyloxyphenoxy)pentanoyl, 6-(4-hexyloxyphenoxy)hexanoyl, (3,4-dimethoxyphenoxy)acetyl, (3,5-dimethoxyphenoxy)acetyl, (2,4-dimethoxyphenoxy)acetyl, (3,4,5-trimethoxyphenoxy)acetyl, (2-acetylamino-4-methylphenoxy)acetyl, (4-acetylamino-3-methoxyphenoxy)acetyl, and the like.

The "phthalimido-substituted lower alkanoyl" includes a straight chain or branched chain alkanoyl group having 2 to 6 carbon atoms which is substituted by phthalimido group, for

example, 2-phthalimidoacetyl, 3-phthalimidopropionyl, 2-phthalimidopropionyl, 4-phthalimidobutyryl, 2,2-dimethyl-3-phthalimidopropionyl, 5-phthalimidopentanoyl, 6-phthalimidohexanoyl, 3-methyl-4-phthalimidobutyryl, and the like.

The "lower alkoxy-carbonyl-lower alkanoyl" includes an alkoxy-carbonyl-alkanoyl group wherein the alkoxy moiety is a straight chain or branched chain alkoxy having 1 to 6 carbon atoms and the alkanoyl moiety is a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms, for example, methoxycarbonylacetyl, 3-methoxycarbonylpropionyl, ethoxycarbonylacetyl, 3-ethoxycarbonylpropionyl, 4-ethoxycarbonylbutyryl, 3-propoxycarbonylpropionyl, 2-methoxycarbonylpropionyl, 6-propoxycarbonylhexanoyl, 5-isopropoxycarbonylpentanoyl, 2,2-dimethyl-3-butoxycarbonylpropionyl, 2-methyl-3-tert-butoxycarbonylpropionyl, pentyloxycarbonylacetyl, hexyloxycarbonylacetyl, and the like.

The "carboxy-lower alkanoyl" includes a carboxy-alkanoyl group wherein the alkanoyl moiety is a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms, for example, carboxyacetyl, 3-carboxypropionyl, 2-carboxypropionyl, 4-carboxybutyryl, 2,2-dimethyl-3-carboxypropionyl, 5-carboxypentanoyl, 6-carboxyhexanoyl, and the like.

The "naphthyloxy-lower alkanoyl" includes a naphthyl-oxy-alkanoyl group wherein the alkanoyl moiety is a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms, for example, naphtyloxyacetyl, 3-naphtyloxypropionyl, 2-naphtyloxypropionyl, 4-naphthyloxybutyryl, 2,2-dimethyl-3-

naphthyloxypropionyl, 5-naphthyloxy-pentanoyl, 6-naphthyloxy-hexanoyl, and the like.

The "phenyl-lower alkoxycarbonyl" includes a phenyl-alkoxycarbonyl wherein the alkoxycarbonyl moiety is a straight chain or branched chain alkoxycarbonyl group having 1 to 6 carbon atoms, for example, benzyloxycarbonyl, 2-phenylethoxycarbonyl, 1-phenylethoxycarbonyl, 3-phenylpropoxycarbonyl, 4-phenylbutoxycarbonyl, 5-phenylpentoxycarbonyl, 6-phenylhexoxycarbonyl, 1,1-dimethyl-2-phenylethoxycarbonyl, 2-methyl-3-phenylpropoxycarbonyl, and the like.

The "lower alkyl having optionally a hydroxy substituent" includes a straight chain or branched chain alkyl having 1 to 6 carbon atoms and having optionally 1 to 3 hydroxy substituents, for example, hydroxymethyl, 2-hydroxyethyl, 1-hydroxyethyl, 3-hydroxypropyl, 2,3-dihydroxyethyl, 4-hydroxybutyl, 3,4-dihydroxybutyl, 1,1-dimethyl-2-hydroxyethyl, 5-hydroxypentyl, 6-hydroxyhexyl, 2-methyl-3-hydroxypropyl, 2,3,4-trihydroxybutyl, and the like.

The "phenyl-lower alkyl" includes a phenylalkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, benzyl, 2-phenylethyl, 1-phenylethyl, 3-phenylpropyl, 4-phenylbutyl, 5-phenylpentyl, 6-phenylhexyl, 1,1-dimethyl-2-phenylethyl, 2-methyl-3-phenylpropyl, and the like.

The "phenoxy-lower alkyl" includes a phenoxyalkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example,

phenoxymethyl, 1-phenoxyethyl, 2-phenoxyethyl, 3-phenoxypropyl, 4-phenoxybutyl, 5-phenoxypropyl, 6-phenoxyhexyl, 1,1-dimethyl-2-phenoxyethyl, 2-methyl-3-phenoxypropyl, and the like.

The "phenyl which has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and a halogen atom" includes a phenyl group which has optionally 1 to 3 substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms and a halogen atom, for example, phenyl, 2-methoxyphenyl, 3-methoxyphenyl, 4-methoxyphenyl, 2-ethoxyphenyl, 3-ethoxyphenyl, 4-ethoxyphenyl, 4-isopropoxyphenyl, 4-pentyloxyphenyl, 2,4-dimethoxyphenyl, 4-hexyloxyphenyl, 3,4-dimethoxyphenyl, 3-ethoxy-4-methoxyphenyl, 2,3-dimethoxyphenyl, 3,4-diethoxyphenyl, 2,5-dimethoxyphenyl, 2,6-dimethoxyphenyl, 3,5-dimethoxyphenyl, 3,4-dipentyloxyphenyl, 3,4,5-trimethoxyphenyl, 2-chlorophenyl, 3-chlorophenyl, 4-chlorophenyl, 2-fluorophenyl, 3-fluorophenyl, 4-fluorophenyl, 2-bromophenyl, 3-bromophenyl, 4-bromophenyl, 2-iodophenyl, 3-iodophenyl, 4-iodophenyl, 3,4-dichlorophenyl, 3,5-dichlorophenyl, 2,6-dichlorophenyl, 2,3-dichlorophenyl, 2,4-dichlorophenyl, 3,4-difluorophenyl, 3,5-dibromophenyl, 3,4,5-trichlorophenyl, 2-methoxy-3-chlorophenyl, 2-methylphenyl, 3-methylphenyl, 4-methylphenyl, 2-ethylphenyl, 3-ethylphenyl, 4-ethylphenyl, 4-isopropylphenyl, 3-butylphenyl, 4-pentylphenyl, 4-hexylphenyl, 3,4-dimethylphenyl, 3,4-diethylphenyl, 2,4-dimethylphenyl, 2,5-dimethylphenyl, 2,6-dimethylphenyl, 3,4,5-trimethylphenyl, 3-chloro-4-methylphenyl, 3-methoxy-4-methyl-5-

iodophenyl, 3,4-dimethoxy-5-bromophenyl, 3,5-diiodo-4-methoxyphenyl, and the like.

The "amino-lower alkyl having optionally a lower alkyl substituent" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, aminomethyl, 2-aminoethyl, 1-aminoethyl, 3-aminopropyl, 4-aminobutyl, 5-aminopentyl, 6-aminohexyl, 1,1-dimethyl-2-aminoethyl, 2-methyl-3-aminopropyl, methylamino-methyl, 1-ethylaminoethyl, 2-propylaminoethyl, 3-isopropylaminopropyl, 4-butylaminobutyl, 5-pentylaminopentyl, 6-hexylaminohexyl, dimethylaminomethyl, (N-ethyl-N-propylamino)methyl, 2-(N-methyl-N-hexylamino)ethyl, and the like.

The "5- or 6-membered saturated heterocyclic group which is formed by binding the groups R^9 and R^{10} together with the nitrogen atom to which they bond with or without being intervened with nitrogen or oxygen atom" includes, for example, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, and the like.

The "heterocyclic group having a substituent selected from a lower alkyl, a lower alkoxy carbonyl and piperidinyl" includes a heterocyclic group having 1 to 3 substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, a straight chain or branched chain alkoxy carbonyl having 1 to 6 carbon atoms and piperidinyl, for example, in addition to the above-mentioned heterocyclic groups

having a substituent of a lower alkyl and piperidinyl, 4-methoxycarbonylpiperazinyl, 4-ethoxycarbonylpiperidinyl, 3-propoxycarbonylpyrrolidinyl, 2-pentyloxycarbonylmorpholino, 4-hexyloxycarbonylpiperidinyl, 4-ethoxycarbonyl-3-methylpiperidinyl, 3-methyl-4-ethoxycarbonylpiperazinyl, and the like.

The "5- or 6-membered saturated heterocyclic group which is formed by binding the groups R^{14} and R^{15} together with the nitrogen atom to which they bond with or without being intervened with nitrogen or oxygen atom" includes, for example, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, and the like.

The "heterocyclic group having a lower alkyl substituent" includes a heterocyclic group having 1 to 3 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, 4-methylpiperazinyl, 3,4-dimethylpiperazinyl, 3-ethylpyrrolidinyl, 2-propylpyrrolidinyl, 3,4,5-trimethylpiperidinyl, 4-butylpiperidinyl, 3-pentylmorpholino, 4-hexylpiperazinyl, and the like.

The heterocyclic ring in the formula (1) includes tetrahydroquinolyl, 2,3,4,5-tetrahydro-1H-benzazepinyl, 1,2,3,4,5,6-hexahydrobenzazocinyl, 1,2-dihydroquinolyl, 2,3-dihydro-1H-benzazepinyl, 1,2,3,4-tetrahydrobenzazocinyl, and the like.

The heterocyclic ring in the formula (1) wherein the carbon atom in the group of the formula: $-(CH_2)_p-$ or $-CH=CH-(CH_2)_q-$ for W is replaced by oxygen atom, sulfur atom,

sulfinyl, sulfonyl, or a group of the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom or a lower alkyl) includes a heterocyclic group wherein the carbon atom in the group of the formula: $-(CH_2)_p-$ or $-CH=CH-(CH_2)_q-$ for W is replaced by oxygen atom, sulfur

atom, sulfinyl, sulfonyl, or a group of the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom or a straight chain or branched chain alkyl having 1 to 6 carbon atoms), for example, 3,4-dihydro-2H-1,4-benzoxazinyl, 1,2,3,5-tetrahydro-4,1-benzoxazepinyl, 1,2,3,4-tetrahydroquinoxalinyl, 1,2,3,4,5,6-hexahydro-1,5-benzodiazocinyl, 5-methyl-1,2,3,4,5,6-hexahydro-1,5-benzodiazocinyl, 4-methyl-1,2,3,4-tetrahydroquinoxalinyl, 1,2,3,4-tetrahydro-5,1-benzoxazepinyl, 3,4-dihydro-2H-1,4-benzothiazinyl, 2,3,4,5-tetrahydro-1,5-benzothiazepinyl, 1,2,3,5-tetrahydro-4,1-benzothiazepinyl, 4-ethyl-1,2,3,4-tetrahydroquinoxalinyl, 4-propyl-1,2,3,4-tetrahydroquinoxalinyl, 4-butyl-1,2,3,4-tetrahydroquinoxalinyl, 4-pentyl-1,2,3,4-tetrahydroquinoxalinyl, 4-hexyl-1,2,3,4-tetrahydroquinoxalinyl, 2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-ethyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-propyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-butyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-pentyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 4-hexyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepinyl, 2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 5-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 5-ethyl-2,3,4,5-tetrahydro-1H-1,5-benzo-

diazepinyl, 5-propyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 5-butyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 5-pentyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 5-hexyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepinyl, 3,4-dihydro-1-oxo-2H-1,4-benzothiazepinyl, 3,4-dihydro-1,1-dioxo-2H-1,4-benzothiazepinyl, 1-oxo-2,3,4,5-tetrahydro-1,5-benzothiazepinyl, 1,1-dioxo-2,3,4,5-tetrahydro-1,5-benzothiazepinyl, 4-oxo-1,2,3,5-tetrahydro-4,1-benzothiazepinyl, 4,4-dioxo-1,2,3,5-tetrahydro-4,1-benzothiazepinyl, and the like.

The "halogen-substituted lower alkoxy" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms which has 1 to 3 substituents of a halogen atom, for example, trifluoromethoxy, trichloromethoxy, chloromethoxy, bromomethoxy, fluoromethoxy, iodomethoxy, difluoromethoxy, dibromomethoxy, 2-chloroethoxy, 2,2,2-trifluoroethoxy, 2,2,2-trichloroethoxy, 3-chloropropoxy, 2,3-dichloropropoxy, 4,4,4-trichlorobutoxy, 4-fluorobutoxy, 5-chloropentyloxy, 3-chloro-2-methylpropoxy, 6-bromohexyloxy, 5,6-dichlorohexyloxy, and the like.

The "halogen-substituted lower alkanoyl" includes a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms which has 1 to 3 substituents of a halogen atom, for example, 2,2,2-trifluoroacetyl, 2,2,2-trichloroacetyl, 2-chloroacetyl, 2-bromoacetyl, 2-fluoroacetyl, 2-iodoacetyl, 2,2-difluoroacetyl, 2,2-dibromoacetyl, 3,3,3-trifluoropropionyl, 3,3,3-trichloropropionyl, 3-chloropropionyl, 2,3-dichloropropionyl, 4,4,4-trichlorobutyryl, 4-fluorobutyryl, 5-

chloropentanoyl, 3-chloro-2-methylpropionyl, 6-bromohexanoyl, 5,6-dibromohexanoyl, and the like.

The "aminocarbonyl-lower alkoxy having a lower alkyl substituent" includes a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms which is substituted by an aminocarbonyl group having 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, methylaminocarbonylmethoxy, 1-ethylaminocarbonylethoxy, 2-propylaminocarbonylethoxy, 3-isopropylaminocarbonylpropoxy, 4-butylaminocarbonylbutoxy, 5-pentylaminocarbonylpentyloxy, 6-hexylaminocarbonylhexyloxy, dimethylaminocarbonylmethoxy, 3-diethylaminocarbonylpropoxy, diethylaminocarbonylmethoxy, (N-ethyl-N-propylamino)carbonylmethoxy, 2-(N-methyl-N-hexylamino)carbonylethoxy, and the like.

The "carbamoyl-lower alkyl" includes a carbamoyl-substituted alkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, carbamoylmethyl, 2-carbamoylethyl, 1-carbamoylethyl, 3-carbamoylpropyl, 4-carbamoylbutyl, 5-carbamoylpentyl, 6-carbamoylhexyl, 1,1-dimethyl-2-carbamoylethyl, 2-methyl-3-carbamoylpropyl, and the like.

The "amino-lower alkanoyl having optionally a lower alkyl substituent" includes a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, 2-aminoacetyl, 3-aminopropionyl, 2-aminopropionyl,

4-aminobutyryl, 5-aminopentanoyl, 6-aminohexanoyl, 2,2-dimethyl-3-aminopropionyl, 2-methyl-3-aminopropionyl, 2-methyl-aminoacetyl, 2-ethylaminopropionyl, 3-propylaminopropionyl, 3-isopropylaminopropionyl, 4-butylaminobutyryl, 5-pentylaminopentanoyl, 6-hexylaminohexanoyl, 2-dimethylaminoacetyl, 2-diethylaminoacetyl, 2-(N-ethyl-N-propylamino)acetyl, 3-(N-methyl-N-hexylamino)propionyl, and the like.

The "amino-lower alkyl having optionally a lower alkanoyl substituent" includes a straight chain or branched chain alkyl having 1 to 6 carbon atoms which is substituted by an amino group having optionally a substituent of a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, aminomethyl, 2-aminoethyl, 1-aminoethyl, 3-aminopropyl, 4-aminobutyl, 5-aminopentyl, 6-aminohexyl, 1,1-dimethyl-2-aminoethyl, 2-methyl-3-aminopropyl, acetylaminomethyl, 1-acetylaminomethyl, 2-propionylaminomethyl, 3-isopropionylaminopropyl, 4-butyrylaminobutyl, 5-pentanoylaminopentyl, 6-hexanoylaminohexyl, formylaminomethyl, and the like.

The "anilinocarbonyl having optionally a lower alkyl substituent on the phenyl ring" includes an anilinocarbonyl group having optionally 1 to 3 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms on the phenyl ring, for example, anilinocarbonyl, 2-methylanilinocarbonyl, 3-methylanilinocarbonyl, 4-methylanilinocarbonyl, 2-ethylanilinocarbonyl, 3-ethylanilinocarbonyl, 4-ethylanilinocarbonyl, 4-isopropylanilinocarbonyl, 3-butylianilinocarbonyl, 4-pentylanilinocarbonyl, 4-hexylanilinocarbonyl, 3,4-dimethyl-

anilinocarbonyl, 3,4-diethylanilinocarbonyl, 2,4-dimethyl-anilinocarbonyl, 2,5-dimethylanilinocarbonyl, 2,6-dimethyl-anilinocarbonyl, 3,4,5-trimethylanilinocarbonyl, and the like.

The "phenylsulfonyl which has optionally a substituent selected from a halogen and a lower alkyl on the phenyl ring" includes a phenylsulfonyl group which has optionally 1 to 3 substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms and a halogen atom, for example, phenylsulfonyl, 2-chlorophenylsulfonyl, 3-chlorophenylsulfonyl, 4-chlorophenylsulfonyl, 2-fluorophenylsulfonyl, 3-fluorophenylsulfonyl, 4-fluorophenylsulfonyl, 2-bromophenylsulfonyl, 3-bromophenylsulfonyl, 4-bromophenylsulfonyl, 2-iodophenylsulfonyl, 3-iodophenylsulfonyl, 4-iodophenylsulfonyl, 3,4-dichlorophenylsulfonyl, 3,5-dichlorophenylsulfonyl, 2,6-dichlorophenylsulfonyl, 2,3-dichlorophenylsulfonyl, 2,4-dichlorophenylsulfonyl, 3,4-difluorophenylsulfonyl, 3,5-dibromophenylsulfonyl, 3,4,5-trichlorophenylsulfonyl, 2-ethyl-3-chlorophenylsulfonyl, 2-methylphenylsulfonyl, 3-methylphenylsulfonyl, 4-methylphenylsulfonyl, 2-ethylphenylsulfonyl, 3-ethylphenylsulfonyl, 4-ethylphenylsulfonyl, 4-isopropylphenylsulfonyl, 3-butylphenylsulfonyl, 4-pentylphenylsulfonyl, 4-hexylphenylsulfonyl, 3,4-dimethylphenylsulfonyl, 3,4-diethylphenylsulfonyl, 2,4-dimethylphenylsulfonyl, 2,5-dimethylphenylsulfonyl, 2,6-dimethylphenylsulfonyl, 3,4,6-trimethylphenylsulfonyl, 3,4,5-trimethylphenylsulfonyl, 3-chloro-4-methylphenylsulfonyl, 4-methyl-5-iodophenylsulfonyl, 3,4-dimethyl-5-bromophenylsulfonyl, 3,5-diiodo-4-methylphenylsulfonyl,

and the like.

The "phthalimido-substituted lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by phthalimido group, for example, phthalimidomethyl, 2-phthalimidoethyl, 1-phthalimidoethyl, 3-phthalimidopropyl, 4-phthalimidobutyl, 5-phthalimidopentyl, 6-phthalimidohexyl, 1,1-dimethyl-2-phthalimidoethyl, 2-methyl-3-phthalimidopropyl, and the like.

The "lower alkynyl" includes a straight chain or branched chain alkynyl having 2 to 6 carbon atoms, for example, ethynyl, 2-propynyl, 2-butyne, 3-butyne, 1-methyl-2-propynyl, 2-pentyne, 2-hexyne, and the like.

The "benzoyl which has optionally a halogen substituent on the phenyl ring" includes a benzoyl group which has optionally 1 to 3 substituents of a halogen atom on the phenyl ring, for example, benzoyl, 2-chlorobenzoyl, 3-chlorobenzoyl, 4-chlorobenzoyl, 2-fluorobenzoyl, 3-fluorobenzoyl, 4-fluorobenzoyl, 2-bromobenzoyl, 3-bromobenzoyl, 4-bromobenzoyl, 2-iodobenzoyl, 3-iodobenzoyl, 4-iodobenzoyl, 3,4-dichlorobenzoyl, 3,5-dichlorobenzoyl, 2,6-dichlorobenzoyl, 2,3-dichlorobenzoyl, 2,4-dichlorobenzoyl, 3,4-difluorobenzoyl, 3,5-dibromobenzoyl, 3,4,5-trichlorobenzoyl, and the like.

The "phenyl-lower alkoxy" includes a phenylalkoxy group wherein the alkoxy moiety is a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms, for

example, benzyloxy, 2-phenylethoxy, 1-phenylethoxy, 3-phenylpropoxy, 4-phenylbutoxy, 5-phenylpentyloxy, 6-phenylhexyloxy, 1,1-dimethyl-2-phenylethoxy, 2-methyl-3-phenylpropoxy, and the like.

The "amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl" include a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms and a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, aminomethoxy, 2-aminoethoxy, 1-aminoethoxy, 3-aminopropoxy, 4-aminobutoxy, 5-aminopentyloxy, 6-aminohexyloxy, 1,1-dimethyl-2-aminoethoxy, 2-methyl-3-aminopropoxy, acetylaminomethoxy, 1-acetylaminomethoxy, 2-propionylaminomethoxy, 3-isopropionylaminopropoxy, 4-butyrylaminobutoxy, 5-pentanoylaminopentyloxy, 6-hexanoylaminohexyloxy, formylaminomethoxy, methylaminomethoxy, 1-ethylaminomethoxy, 2-propylaminomethoxy, 3-isopropylaminopropoxy, 4-butylaminobutoxy, 5-pentylaminopentyloxy, 6-hexylaminohexyloxy, dimethylaminomethoxy, (N-ethyl-N-propylamino)methoxy, 2-(N-methyl-N-hexylamino)ethoxy, and the like.

The "benzoyloxy which has optionally a halogen substituent on the phenyl ring" includes a benzoyloxy group which has optionally 1 to 3 substituents of a halogen atom on the phenyl ring, for example, benzoyloxy, 2-chloro-

benzoyloxy, 3-chlorobenzoyloxy, 4-chlorobenzoyloxy, 2-fluorobenzoyloxy, 3-fluorobenzoyloxy, 4-fluorobenzoyloxy, 2-bromobenzoyloxy, 3-bromobenzoyloxy, 4-bromobenzoyloxy, 2-iodobenzoyloxy, 3-iodobenzoyloxy, 4-iodobenzoyloxy, 3,4-dichlorobenzoyloxy, 3,5-dichlorobenzoyloxy, 2,6-dichlorobenzoyloxy, 2,3-dichlorobenzoyloxy, 2,4-dichlorobenzoyloxy, 3,4-difluorobenzoyloxy, 3,5-dibromobenzoyloxy, 3,4,5-trichlorobenzoyloxy, and the like.

The "lower alkanoyloxy-substituted lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by a straight chain or branched chain alkanoyloxy group having 2 to 6 carbon atoms, for example, acetyloxymethyl, 2-propionyloxyethyl, 1-butyryloxyethyl, 3-acetyloxypropyl, 4-acetyloxybutyl, 4-isobutyryloxybutyl, 5-pentanoyloxypropyl, 6-acetyloxyhexyl, 6-tert-butylcarbonyloxyhexyl, 1,1-dimethyl-2-hexanoyloxyethyl, 2-methyl-3-acetyloxypropyl, and the like.

The "lower alkylsulfonyloxy-lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by a straight chain or branched chain alkylsulfonyloxy group having 1 to 6 carbon atoms, for example, methylsulfonyloxymethyl, 1-ethylsulfonyloxyethyl, 2-propylsulfonyloxyethyl, 3-isopropylsulfonyloxypropyl, 4-butylsulfonyloxybutyl, 5-pentylsulfonyloxypropyl, 6-hexylsulfonyloxyhexyl, 1,1-dimethyl-2-methylsulfonyloxyethyl, 2-methyl-3-ethylsulfonyloxypropyl, and the like.

like.

The "azido-lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by an azido group, for example, azidomethyl, 1-azidoethyl, 2-azidoethyl, 3-azidopropyl, 4-azidobutyl, 5-azidopentyl, 6-azidohexyl, 1,1-dimethyl-2-azidoethyl, 2-methyl-3-azidopropyl, and the like.

The "lower alkanoyloxyimino" includes a straight chain or branched chain alkanoyloxyimino group having 1 to 6 carbon atoms, for example, formyloxyimino, acetyloxyimino, propionyloxyimino, butyryloxyimino, isobutyryloxyimino, pentanoyloxyimino, tert-butylcarbonyloxyimino, hexanoyloxyimino, and the like.

The "lower alkylidene" includes a straight chain or branched chain alkylidene group having 1 to 6 carbon atoms, for example, methylenidene, ethylenidene, propylenidene, isopropylenidene, butylenidene, pentylenidene, hexylenidene, and the like.

The "oxiranyl-substituted lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by oxiranyl group, for example, oxiranylmethyl, 1-oxiranylethyl, 2-oxiranylethyl, 3-oxiranylpropyl, 4-oxiranylbutyl, 5-oxiranylpentyl, 6-oxiranylhhexyl, 1,1-dimethyl-2-oxiranylethyl, 2-methyl-3-oxiranylpropyl, and the like.

The "lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having

optionally a lower alkyl substituent" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms and having 1 to 2 substituents selected from a straight chain or branched chain alkoxy group having 1 to 6 carbon atoms, hydroxy and an amino having optionally a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, methoxymethyl, 1-ethoxyethyl, 2-propoxyethyl, 3-isopropoxypropyl, 4-butoxybutyl, 5-pentyl-oxy-pentyl, 6-hexyloxyhexyl; 1,1-dimethyl-2-methoxyethyl, 2-methyl-3-ethoxypropyl, 3-methoxy-2-hydroxypropyl, hydroxy-methyl, 2-hydroxyethyl, 1-hydroxyethyl, 3-hydroxypropyl, 2,3-dihydroxyethyl, 4-hydroxybutyl, 3,4-dihydroxybutyl, 1,1-dimethyl-2-hydroxyethyl, 5,6-dihydroxyhexyl, 5-hydroxy-pentyl, 6-hydroxyhexyl, 6-(N-ethyl-N-methylamino)-5-methoxy-hexyl, 2-methyl-3-hydroxypropyl, aminomethyl, 1-aminoethyl, 2-aminoethyl, 3-aminopropyl, 4-aminobutyl, 5-aminopentyl, 6-aminohexyl, 1,1-dimethyl-2-aminoethyl, 2-methyl-3-amino-propyl, methylaminomethyl, ethylaminomethyl, propylamino-methyl, isopropylaminomethyl, butylaminomethyl, tert-butylaminomethyl, pentylaminomethyl, hexylaminomethyl, dimethylaminomethyl, diethylaminomethyl, dipropylamino-methyl, dibutylaminomethyl, dipentylaminomethyl, dihexyl-aminomethyl, N-methyl-N-ethylaminomethyl, N-methyl-N-propylaminomethyl, N-methyl-N-butylaminomethyl, N-methyl-N-hexylaminomethyl, 1-methylaminoethyl, 2-ethylaminoethyl, 3-propylaminopropyl, 4-butylaminobutyl, 1,1-dimethyl-2-pentyl-aminoethyl, 5-hexylaminopentyl, 6-dimethylaminohexyl, 4-

dimethylaminobutyl, 2-diethylaminoethyl, 1-(N-methyl-N-hexylamino)ethyl, 3-dihexylaminopropyl, 6-diethylaminoethyl, 4-dibutylaminobutyl, 2-(N-methyl-N-pentylamino)ethyl, 2-hydroxy-3-diethylaminopropyl, 3-hydroxy-4-methylaminobutyl, 5-hydroxy-6-diethylaminoethyl, 4-hydroxy-5-dimethylaminopentyl, 4-hydroxy-5-methylaminopentyl, 4-hydroxy-5-diethylaminopentyl, 5-hydroxy-6-ethylaminoethyl, 5-hydroxy-6-isopropylaminoethyl, 5-hydroxy-6-aminoethyl, and the like.

The "aminocarbonyloxy having optionally a lower alkyl substituent" includes an aminocarbonyloxy group having optionally 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, aminocarbonyloxy, methylaminocarbonyloxy, ethylaminocarbonyloxy, propylaminocarbonyloxy, isopropylaminocarbonyloxy, butylaminocarbonyloxy, tert-butylaminocarbonyloxy, pentylaminocarbonyloxy, hexylaminocarbonyloxy, dimethylaminocarbonyloxy, diethylaminocarbonyloxy, dipropylaminocarbonyloxy, dibutylaminocarbonyloxy, dipentylaminocarbonyloxy, dihexylaminocarbonyloxy, N-methyl-N-ethylaminocarbonyloxy, N-ethyl-N-propylaminocarbonyloxy, N-methyl-N-butylaminocarbonyloxy, N-methyl-N-hexylaminocarbonyloxy, and the like.

The "lower alkanoyloxy having optionally a halogen substituent" includes a straight chain or branched chain alkanoyloxy group having 1 to 6 carbon atoms which has optionally 1 to 3 substituents of a halogen atom, for example, in addition to the above lower alkanoyl group, 2,2,2-trifluoroacetyloxy, 2,2,2-trichloroacetyloxy, 2-chloroacetyloxy, 2-bromoacetyloxy, 2-fluoroacetyloxy, 2-iodoacetyloxy, 2,2-difluoroacetyloxy, 2,2-

dibromoacetyloxy, 3,3,3-trifluoropropionyloxy, 3,3,3-trichloropropionyloxy, 3-chloropropionyloxy, 2,3-dichloropropionyloxy, 4,4,4-trichlorobutyryloxy, 4-fluorobutyryloxy, 5-chloropentanoyloxy, 3-chloro-2-methylpropionyloxy, 6-bromohexanoyloxy, 5,6-dibromohexanoyloxy, and the like.

The "amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl" include a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents selected from a straight chain or branched chain alkyl group having 1 to 6 carbon atoms and a straight chain or branched chain alkanoyl group having 1 to 6 carbon atoms, for example, aminomethyl, 2-aminoethyl, 1-aminoethyl, 3-aminopropyl, 4-aminobutyl, 5-aminopentyl, 6-aminoethyl, 1,1-dimethyl-2-aminoethyl, 2-methyl-3-aminopropyl, acetylaminomethyl, 1-acetylaminomethyl, 2-propionylaminomethyl, 3-isopropionylaminopropyl, 4-butyrylaminobutyl, 5-pentanoylaminopentyl, 6-hexanoylaminohexyl, formylaminomethyl, methylaminomethyl, 1-ethylaminomethyl, 2-propylaminomethyl, 3-isopropylaminopropyl, 4-butylaminobutyl, 5-pentylaminopentyl, 6-hexylaminohexyl, dimethylaminomethyl, (N-ethyl-N-propylamino)methyl, 2-(N-methyl-N-hexylamino)ethyl, and the like.

The "amino-lower alkanoyloxy having optionally a lower alkyl substituent" includes a straight chain or branched chain alkanoyloxy having 2 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms,

for example, 2-aminoacetyloxy, 3-aminopropionyloxy, 2-amino-propionyloxy, 4-aminobutyryloxy, 5-aminopentanoyloxy, 6-amino-hexanoyloxy, 2,2-dimethyl-3-aminopropionyloxy, 2-methyl-3-amino-propionyloxy, 2-methylaminoacetyloxy, 2-ethylaminopropionyloxy, 3-propylaminopropionyloxy, 3-isopropylaminopropionyloxy, 4-butyl-aminobutyryloxy, 5-pentylaminopentanoyloxy, 6-hexylaminohexanoyl-oxy, 2-dimethylaminoacetyloxy, 2-diethylaminoacetyloxy, 2-(N-ethyl-N-propylamino)acetyloxy, 3-(N-methyl-N-hexylamino)-propionyloxy, and the like.

The "pyridyl-lower alkyl" include a pyridylalkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, (4-pyridyl)-methyl, 1-(3-pyridyl)ethyl, 2-(2-pyridyl)ethyl, 3-(2-pyridyl)-propyl, 4-(3-pyridyl)butyl, 5-(4-pyridyl)pentyl, 6-(2-pyridyl)-hexyl, 1,1-dimethyl-2-(3-pyridyl)ethyl, 2-methyl-3-(4-pyridyl)-propyl, and the like.

The "5- or 6-membered saturated heterocyclic group which is formed by binding the groups R^{82} and R^{83} together with the nitrogen atom to which they bond with or without being intervened with nitrogen, oxygen or sulfur atom" includes, for example, pyrrolidinyl, piperidinyl, piperazinyl, morpholino, thio-morpholino, and the like.

The above heterocyclic group which has a substituent selected from oxo, a lower alkyl, a lower alkanoyl and carbamoyl includes the above heterocyclic groups which have 1 to 3 substituents selected from oxo, a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, a straight chain or

branched chain alkanoyl group having 1 to 6 carbon atoms, and carbamoyl group, for example, 4-methylpiperazinyl, 3,4-dimethylpiperazinyl, 3-ethylpyrrolidinyl, 2-propylpyrrolidinyl, 3,4,5-trimethylpiperidinyl, 4-butylpiperidinyl, 3-pentylmorpholino, 4-hexylpiperazinyl, 2-methylthiomorpholino, 4-acetylpiperazinyl, 2-propionylmorpholino, 3-butyrylthiomorpholino, 3-pentanoylpyrrolidinyl, 4-hexanoylpiperidinyl, 3-methyl-4-acetylpiperazinyl, 2-carbamoylpyrrolidinyl, 4-carbamoylpiperazinyl, 3-carbamoylthiomorpholino, 2-carbamoylmorpholino, 3-carbamoylpiperidinyl, 1-oxo-thiomorpholino, 1,1-dioxothiomorpholino, and the like.

The "lower alkylsulfonyl" includes a straight chain or branched chain alkylsulfonyl group having 1 to 6 carbon atoms, for example, methylsulfonyl, ethylsulfonyl, propylsulfonyl, isopropylsulfonyl, butylsulfonyl, tert-butylsulfonyl, pentylsulfonyl, hexylsulfonyl, and the like.

The "aminocarbonyl having optionally a lower alkyl substituent" includes an aminocarbonyl group having optionally 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, aminocarbonyl, methylaminocarbonyl, ethylaminocarbonyl, propylaminocarbonyl, isopropylaminocarbonyl, butylaminocarbonyl, tert-butylaminocarbonyl, pentylaminocarbonyl, hexylaminocarbonyl, dimethylaminocarbonyl, diethylaminocarbonyl, dipropylaminocarbonyl, dibutylaminocarbonyl, dipentylaminocarbonyl, dihexylaminocarbonyl, N-methyl-N-ethylaminocarbonyl, N-ethyl-N-propylaminocarbonyl, N-methyl-N-butylaminocarbonyl, N-methyl-N-hexylaminocarbonyl, and the like.

The "cyano-substituted lower alkyl" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by cyano group, for example, cyanomethyl, 2-cyanoethyl, 1-cyanoethyl, 3-cyanopropyl, 4-cyanobutyl, 5-cyanopentyl, 6-cyanoethyl, 1,1-dimethyl-2-cyanoethyl, 2-methyl-3-cyanopropyl, and the like.

The "lower alkoxy-carbonyl-substituted lower alkyl" includes an alkoxy-carbonyl-substituted straight chain or branched chain alkyl group having 1 to 6 carbon atoms wherein the alkoxy-carbonyl moiety is a straight chain or branched chain alkoxy-carbonyl group having 1 to 6 carbon atoms, for example, methoxycarbonylmethyl, 3-methoxycarbonylpropyl, ethoxycarbonylmethyl, 3-ethoxycarbonylpropyl, 4-ethoxycarbonylbutyl, 5-isopropoxycarbonylpentyl, 6-propoxycarbonylhexyl, 1,1-dimethyl-2-butoxycarbonylethyl, 2-methyl-3-tert-butoxycarbonylpropyl, 2-pentyloxy-carbonylethyl, hexyloxy-carbonylmethyl, and the like.

The "carboxy-substituted lower alkyl" includes a carboxy-substituted alkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, carboxymethyl, 2-carboxyethyl, 1-carboxyethyl, 3-carboxypropyl, 4-carboxybutyl, 5-carboxypentyl, 6-carboxyhexyl, 1,1-dimethyl-2-carboxyethyl, 2-methyl-3-carboxypropyl, and the like.

The "tetrahydropyranyloxy-substituted lower alkyl" includes a tetrahydropyranyloxy-substituted straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, (2-tetrahydropyranyloxy)methyl, 2-(3-tetrahydropyranyl-

oxy)ethyl, 1-(4-tetrahydropyranyloxy)ethyl, 3-(2-tetrahydropyranyloxy)propyl, 4-(3-tetrahydropyranyloxy)butyl, 5-(4-tetrahydropyranyloxy)pentyl, 6-(2-tetrahydropyranyloxy)hexyl, 1,1-dimethyl-2-(3-tetrahydropyranyloxy)ethyl, 2-methyl-3-(4-tetrahydropyranyloxy)propyl, and the like.

The "piperidinyl having optionally a phenyl-lower alkyl substituent" includes a piperidinyl which has optionally a substituent of a phenylalkyl group wherein the alkyl moiety is a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, piperidinyl, 1-benzyl-4-piperidinyl, 1-(2-phenylethyl)-3-piperidinyl, 1-(1-phenylethyl)-2-piperidinyl, 1-(3-phenylpropyl)-4-piperidinyl, 1-(4-phenylbutyl)-4-piperidinyl, 1-(5-phenylpentyl)-4-piperidinyl, 1-(6-phenylhexyl)-4-piperidinyl, 1-(1,1-dimethyl-2-phenylethyl)-3-piperidinyl, 1-(2-methyl-3-phenylpropyl)-2-piperidinyl, and the like.

The "imidazolyl-substituted lower alkanoyl" includes an imidazolyl-substituted alkanoyl group wherein the alkanoyl moiety is a straight chain or branched chain alkanoyl group having 2 to 6 carbon atoms, for example, (1-imidazolyl)acetyl, 3-(2-imidazolyl)propionyl, 2-(4-imidazolyl)propionyl, 4-(1-imidazolyl)butyryl, 2,2-dimethyl-3-(2-imidazolyl)propionyl, 5-(4-imidazolyl)pentanoyl, 6-(1-imidazolyl)hexanoyl, and the like.

The "amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxycarbonyl" includes a straight chain or branched chain alkanoyl having 2 to 6 carbon atoms which is substituted by an amino group having optionally 1 to 2 substituents selected from a straight chain or

branched chain alkyl group having 1 to 6 carbon atoms and a straight chain or branched chain alkoxy carbonyl group having 1 to 6 carbon atoms, for example, 2-aminoacetyl, 3-amino-propionyl, 2-aminopropionyl, 4-aminobutyryl, 5-amino-pentanoyl, 6-aminohexanoyl, 2,2-dimethyl-3-aminopropionyl, 2-methyl-3-aminopropionyl, 2-methylaminoacetyl, 2-ethyl-aminopropionyl, 3-propylaminopropionyl, 3-isopropylamino-propionyl, 4-butylaminobutyryl, 5-pentylaminopentanoyl, 6-hexylaminohexanoyl, 2-dimethylaminoacetyl, 2-diethylamino-acetyl, 2-(N-ethyl-N-propylamino)acetyl, 3-(N-methyl-N-hexylamino)propionyl, 2-methoxycarbonylaminoacetyl, 2-ethoxycarbonylaminoacetyl, 3-propoxycarbonylamino-propionyl, 4-butoxycarbonylamino-butyryl, 2-tert-butoxycarbonylamino-acetyl, 5-pentyloxycarbonylamino-pentanoyl, 6-hexyloxy-carbonylamino-hexanoyl, 2-(N-methyl-N-tert-butoxycarbonyl-amino)acetyl, and the like.

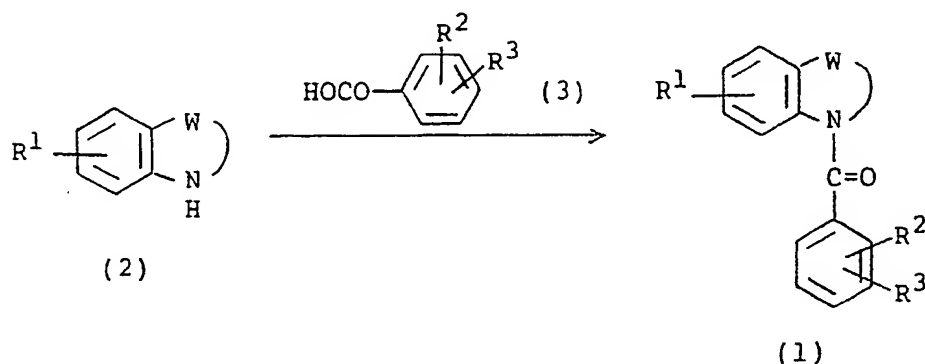
The "aminocarbonyl-lower alkyl having a lower alkyl substituent" includes a straight chain or branched chain alkyl group having 1 to 6 carbon atoms which is substituted by an aminocarbonyl group having 1 to 2 substituents of a straight chain or branched chain alkyl group having 1 to 6 carbon atoms, for example, methylaminocarbonylmethyl, 1-ethyl-aminocarbonylethyl, 2-propylaminocarbonylethyl, 3-isopropyl-aminocarbonylpropyl, 4-butylaminocarbonylbutyl, 5-pentylamino-carbonylpentyl, 6-hexylaminocarbonylhexyl, dimethylamino-carbonylmethyl, 3-diethylaminocarbonylpropyl, diethylamino-carbonylmethyl, (N-ethyl-N-propylamino)carbonylmethyl, 2-(N-

methyl-N-hexylamino)carbonylethyl, and the like.

The "amino-substituted lower alkoxy having optionally a lower alkyl substituent" includes an amino-substituted straight chain or branched chain alkoxy having 1 to 6 carbon atoms which has optionally 1 to 2 substituents of a straight chain or branched chain alkyl having 1 to 6 carbon atoms, such as aminomethoxy, 2-aminoethoxy, 1-aminoethoxy, 3-aminopropoxy, 4-aminobutoxy, 5-aminopentyloxy, 6-aminohexyloxy, 1,1-dimethyl-2-aminoethoxy, 2-methyl-3-aminopropoxy, methylaminomethoxy, 1-ethylaminoethoxy, 2-propylaminoethoxy, 3-isopropylaminopropoxy, 4-butylaminobutoxy, 5-pentylaminopentyloxy, 6-hexylaminohexyloxy, dimethylaminomethoxy, (N-ethyl-N-propylamino)methoxy, 2-(N-methyl-N-hexylamino)ethoxy, and the like.

The compounds of the present invention can be prepared by various processes, for example, by the processes shown in the following reaction schemes.

[Reaction Scheme-1]



wherein R^1 , R^2 , R^3 , and W are the same as defined above.

The process of Reaction Scheme-1 is carried out by

reacting a benzoheterocyclic compound of the formula (2) and a carboxylic acid compound of the formula (3) by a conventional amido bond forming reaction. The amido bond forming reaction can be carried out under the conditions for the conventional amido bond forming reaction, for example,

(a) a mixed acid anhydride process, i.e. a process of reacting the carboxylic acid compound (3) with an alkyl-halocarboxylic acid to form a mixed acid anhydride and reacting the resultant with the amine compound (2),

(b) an activated ester process, i.e. a process of converting the carboxylic acid compound (3) into an activated ester, such as p-nitrophenyl ester, N-hydroxy-succinimide ester, 1-hydroxybenzotriazole ester, etc., and reacting the resultant with the amine compound (2),

(c) a carbodiimide process, i.e. a process of condensing the carboxylic acid compound (3) and the amine compound (2) in the presence of an activating agent such as dicyclohexylcarbodiimide, carbonyldiimidazole, etc.,

(d) other processes, i.e. a process of converting the carboxylic acid compound (3) into a carboxylic anhydride by treatment with a dehydrating agent such as acetic anhydride, and reacting the resultant with the amine compound (2); a process of reacting an ester of the carboxylic acid compound (3) with a lower alcohol and the amine compound (?) at a high temperature under high pressure; a process of reacting an acid halide compound of the carboxylic acid compound (3), i.e. a carboxylic acid

halide, with the amine compound (2), and the like.

The mixed acid anhydride used in the above mixed acid anhydride process (a) is obtained by the known Schotten-Baumann reaction, and the reaction product is used without isolation from the reaction mixture for the reaction with the amine compound (2) to give the desired compound of the formula (1). The Schotten-Baumann reaction is usually carried out in the presence of a basic compound. The basic compound is any conventional compounds used for the Schotten-Baumann reaction and includes, for example, organic basic compounds such as triethylamine, trimethylamine, pyridine, dimethylaniline, N-methylmorpholine, 1,5-diazabicyclo[4.3.0]nonene-5 (DBN), 1,8-diazabicyclo[5.4.0]-undecene-7 (DBU), 1,4-diazabicyclo[2.2.2]octane (DABCO), etc., and inorganic basic compounds such as potassium carbonate, sodium carbonate, potassium hydrogen carbonate, sodium hydrogen carbonate, etc. The reaction is usually carried out at a temperature of from about -20°C to about 100°C, preferably from about 0°C to about 50°C, for about 5 minutes to about 10 hours, preferably about 5 minutes to about 2 hours.

The reaction of the thus obtained mixed acid anhydride with the amine compound (2) is usually carried out at a temperature of from about -20°C to about 150°C, preferably about 10°C to about 50°C, for about 5 minutes to about 10 hours, preferably about 5 minutes to about 5 hours. The mixed acid anhydride process is usually carried

out in an appropriate solvent. The solvent is any conventional solvents which are usually used in the mixed acid anhydride process and includes, for example, halogenated hydrocarbons (e.g. chloroform, dichloromethane, dichloroethane, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), ethers (e.g. diethyl ether, diisopropyl ether, tetrahydrofuran, dimethoxyethane, etc.), esters (e.g. methyl acetate, ethyl acetate, etc.), aprotic polar solvents (e.g. N,N-dimethylformamide, dimethylsulfoxide, hexamethylphosphoric triamide, etc.), or a mixture of these solvents. The alkylhalocarboxylic acid used in the mixed acid anhydride process includes, for example, methyl chloroformate, methyl bromoformate, ethyl chloroformate, ethyl bromoformate, isobutyl chloroformate, and the like. In said process, the carboxylic acid compound (3), the alkylhalocarboxylic acid and the amine (2) are usually used in each equimolar amount, but preferably, the alkylhalocarboxylic acid and the carboxylic acid compound (3) are used each in an amount of about 1 to 1.5 mole to 1 mole of the amine (2).

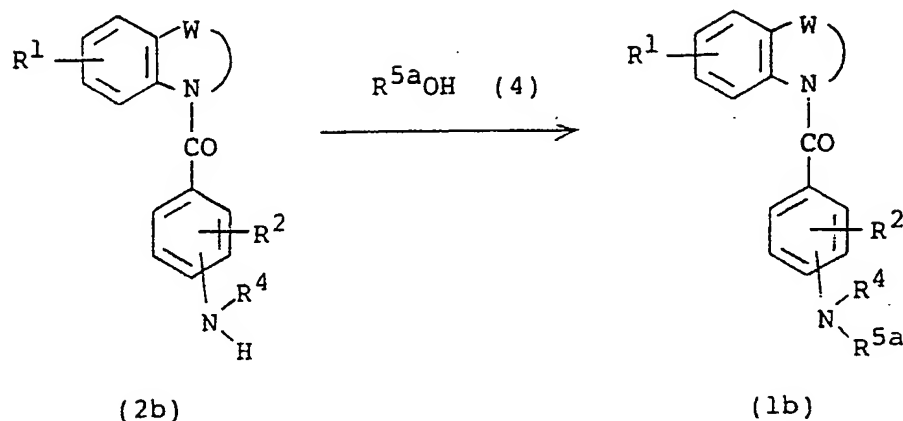
Among the above other processes (d), in case of the process of reacting the carboxylic acid halide with the amine compound (2), the reaction is usually carried out in the presence of a basic compound in an appropriate solvent. The basic compound is any conventional compounds and includes, in addition to the basic compounds used for the above-mentioned Schotten-Baumann reaction, sodium hydroxide,

potassium hydroxide, sodium hydride, potassium hydride. etc. The solvent includes, in addition to the solvents used for the above-mentioned mixed acid anhydride process, alcohols (e.g. methanol, ethanol, propanol, butanol, 3-methoxy-1-butanol, ethylcellosolve, methylcellosolve, etc.), acetonitrile, pyridine, acetone, water, and the like. The amount of the amine compound (2) and the carboxylic acid halide is not critical, but the carboxylic acid halide is usually used at least in equimolar amount, preferably about 1 to 5 moles to 1 mole of the amine compound (2). The reaction is usually carried out at a temperature of from about -20°C to about 180°C , preferably from about 0°C to about 150°C , for about 5 minutes to about 30 hours.

The amido bond forming reaction in the above Reaction Scheme-1 may also be carried out by reacting the carboxylic acid compound (3) and the amine (2) in the presence of a condensation agent, i.e. phosphoric compounds such as triphenylphosphine, diphenylphosphinyl chloride, phenyl-N-phenylphosphoramidate chloridate, diethyl chlorophosphate, diethyl phosphorocyanidate, diphenylphosphoric azide, bis(2-oxo-3-oxazolidinyl)phosphinic chloride, etc. The reaction is usually carried out in the presence of the solvent and basic compound as used in the above reaction of the carboxylic acid halide and the amine (2) at a temperature of from about -20°C to about 150°C , preferably about 0°C to about 100°C , for about 5 minutes to about 30 hours. The condensation agent and the carboxylic acid compound (3)

are used at least in equimolar amount, preferably about 1 to 2 moles, to 1 mole of the amine (2).

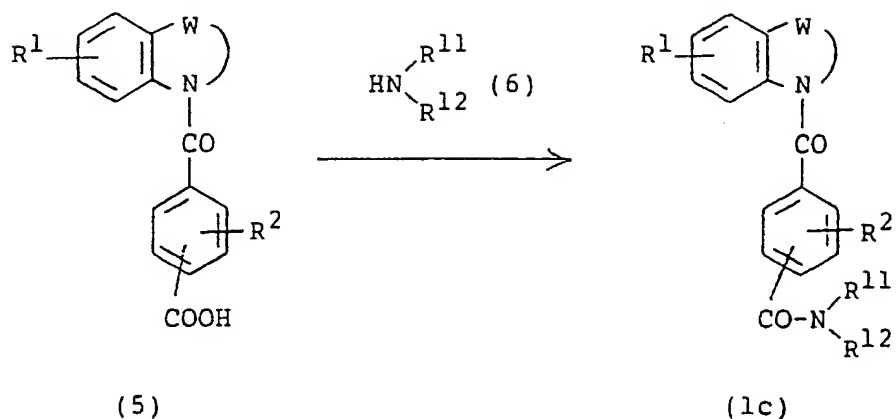
[Reaction Scheme-2]



wherein R^1 , R^2 , R^4 and W are as defined above, R^{5a} is the same as R^5 as defined above except excluding an anilino-carbonyl having optionally a lower alkyl substituent on the phenyl ring, a phenylsulfonyl having optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring and quinolylsulfonyl.

The reaction of the compound (2b) and the compound (4) is carried out in the same manner as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

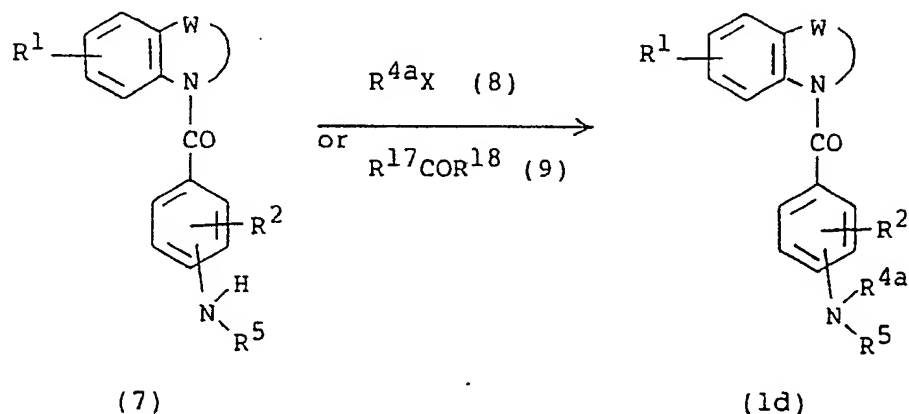
[Reaction Scheme-3]



wherein R^1 , R^2 , R^{11} , R^{12} and W are as defined above.

The reaction of the compound (5) and the compound (6) is carried out under the same conditions as used in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

[Reaction Scheme-4]



wherein R^1 , R^2 , R^5 and W are as defined above, and R^{4a} is a lower alkyl, R^{17} and R^{18} are each hydrogen atom or a lower alkyl, and X is a halogen atom.

The reaction of the compound (7) and the compound (8) is usually carried out in an inert solvent in the

presence or absence of a basic compound. The inert solvent includes, for example, aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), ethers (e.g. tetrahydrofuran, dioxane, diethylene glycol dimethyl ether, etc.), halogenated hydrocarbons (e.g. dichloromethane, chloroform, carbon tetrachloride, etc.), lower alcohols (e.g. methanol, ethanol, isopropanol, butanol, tert-butanol, etc.), acetic acid, ethyl acetate, acetone, acetonitrile, pyridine, dimethylsulfoxide, dimethylformamide, hexamethylphosphoric triamide, etc., or a mixture of these solvents. The basic compound includes, for example, carbonates (e.g. sodium carbonate, potassium carbonate, sodium hydrogen carbonate, potassium hydrogen carbonate, etc.), metal hydroxides (e.g. sodium hydroxide, potassium hydroxide, etc.), sodium hydride, potassium, sodium, sodium amide, metal alcoholates (e.g. sodium methoxide, sodium ethoxide, etc.), and organic basic compounds (e.g. pyridine, N-ethyldiisopropylamine, dimethylaminopyridine, triethylamine, 1,5-diazabicyclo[4.3.0]nonene-(5) (DBN), 1,8-diazabicyclo[5.4.0]undecene-7 (DBU), 1,4-diazabicyclo[2.2.2]octane (DABCO), etc.). The amount of the compound (7) and the compound (8) is not critical, but the compound (8) is usually used at least in equivalent amount, preferably 1 to 10 moles, to 1 mole of the compound (7). The reaction is usually carried out at a temperature of from about 0°C to about 200°C, preferably from about 0°C to about 170°C, for about 30 minutes to about 30 hours. In the reaction, an alkali metal halide (e.g.

sodium iodide, potassium iodide, etc.) may be added to the reaction system.

The reaction of the compound (7) and the compound (9) is carried out in an appropriate solvent or without solvent in the presence of a reducing agent. The solvent includes, for example, water, alcohols (e.g. methanol, ethanol, isopropanol, etc.), acetonitrile, formic acid, acetic acid, ethers (e.g. dioxane, diethyl ether, diglyme, tetrahydrofuran, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), or a mixture of these solvents. The reducing agent includes, for example, formic acid, fatty acid alkali metal salts (e.g. sodium formate, etc.), hydrogenating reducing agents (e.g. sodium borohydride, sodium cyanoborohydride, lithium aluminum hydride, etc.), catalytic reducing agents (e.g. palladium black, palladium-carbon, platinum oxide, platinum black, Raney nickel, etc.).

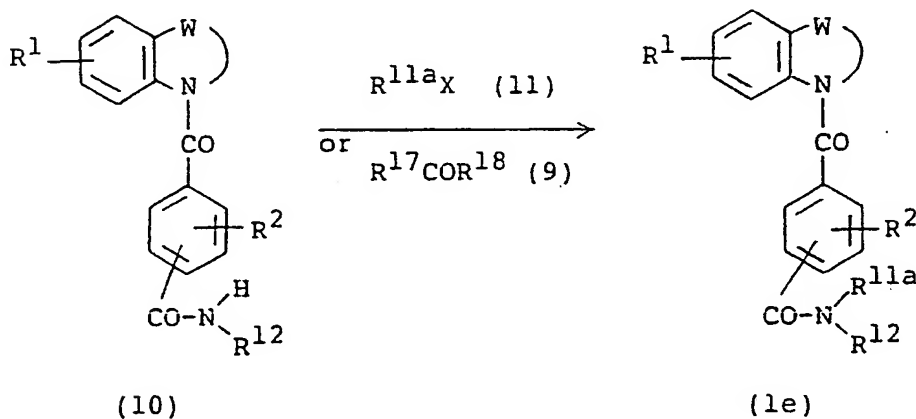
When formic acid is used as the reducing agent, the reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably about 50°C to about 150°C, for about 1 to 10 hours. The formic acid is usually used in a large excess amount to the compound (7).

When a hydrogenating reducing agent is used, the reaction is usually carried out at a temperature of about -30°C to about 100°C, preferably about 0°C to about 70°C, for about 30 minutes to about 12 hours. The reducing agent is usually used in an amount of 1 to 20 moles, preferably 1

to 6 moles, to 1 mole of the compound (7). When lithium aluminum hydride is used as the reducing agent, it is preferable to use a solvent selected from ethers (e.g. diethyl ether, dioxane, tetrahydrofuran, diglyme, etc.) and aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.).

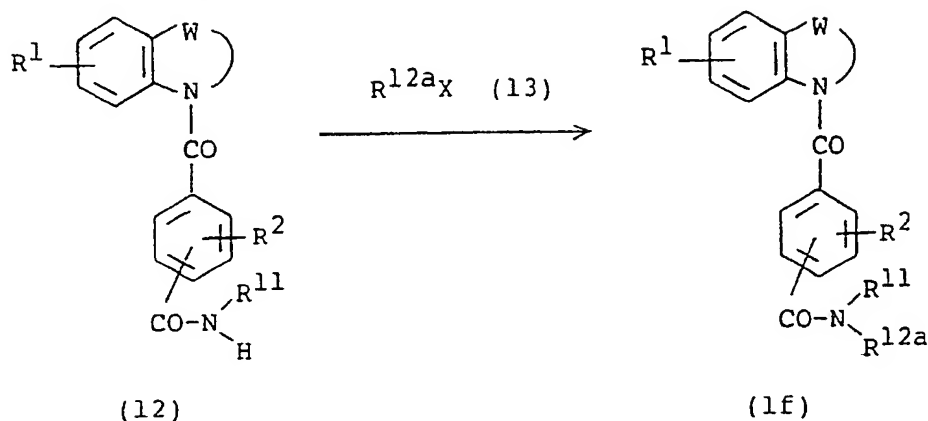
When a catalytic reducing agent is used, the reaction is usually carried out under atmospheric pressure to about 20 atm., preferably atmospheric pressure to about 10 atm. under hydrogen atmosphere or in the presence of a hydrogen donor (e.g. formic acid, ammonium formate, cyclohexene, hydrazine hydrate, etc.) at a temperature of about -30°C to about 100°C , preferably about 0°C to about 60°C , for about 1 to 12 hours. The catalytic reducing agent is usually used in an amount of about 0.1 to 40 % by weight, preferably about 1 to 20 % by weight, of the amount of the compound (7). The compound (9) is usually used at least in equivalent amount, preferably equivalent to a large excess amount, to the compound (7).

[Reaction Scheme-5A]



wherein R^1 , R^2 , R^{12} , R^{17} , R^{18} , X and W are as defined above, and R^{11a} is a lower alkyl.

[Reaction Scheme-5B]

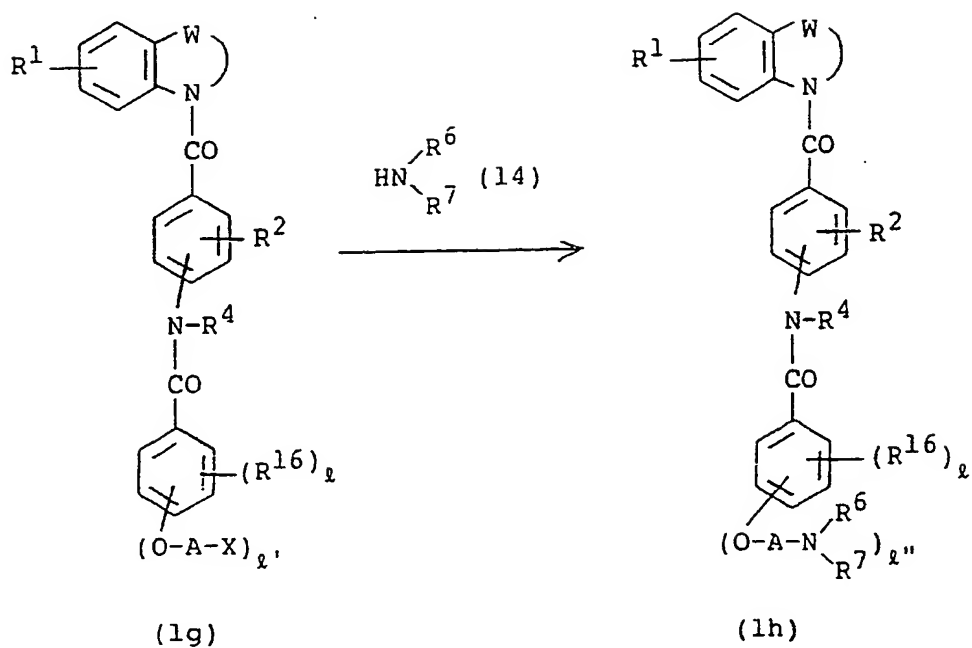


wherein R^1 , R^2 , R^{11} , X and W are as defined above, and R^{12a} is a cycloalkyl.

The reaction of the compound (10) and the compound (11) in the Reaction Scheme-5A and the reaction of the compound (12) and the compound (13) in the Reaction Scheme-5B are carried out in the same manner as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

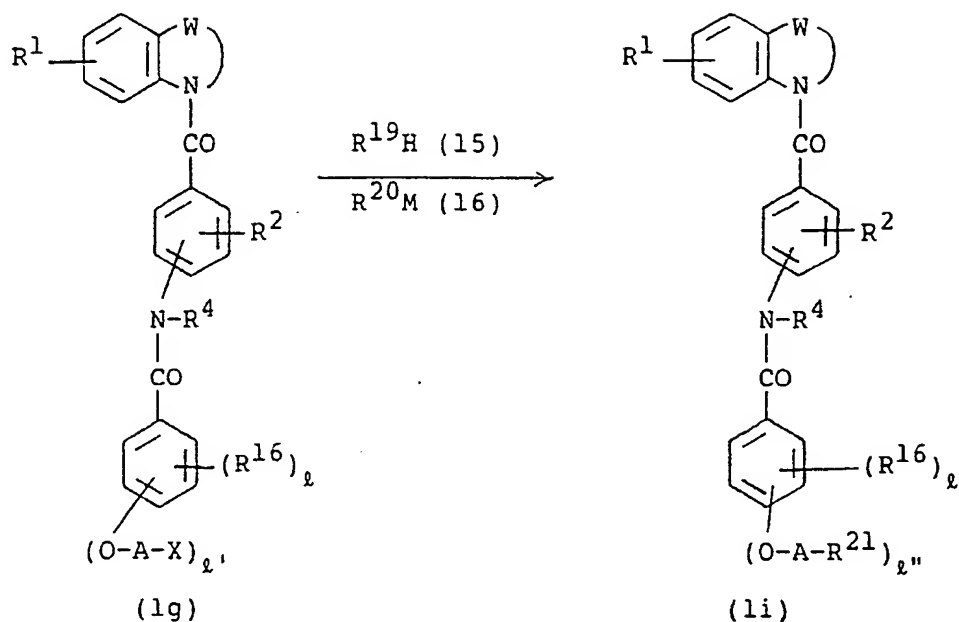
Besides, the reaction of the compound (10) and the compound (9) in the Reaction Scheme-5A is carried out in the same manner as in the reaction of the compound (7) and the compound (9) in the above Reaction Scheme-4.

[Reaction Scheme-6A]



wherein R^1 , R^2 , R^4 , R^{16} , R^6 , R^7 , X , W , and A are as defined above, l is 0 or an integer of 1 to 3, l' and l'' are each an integer of 1 to 3, provided that $l + l'$ and $l + l''$ are each an integer not more than 3.

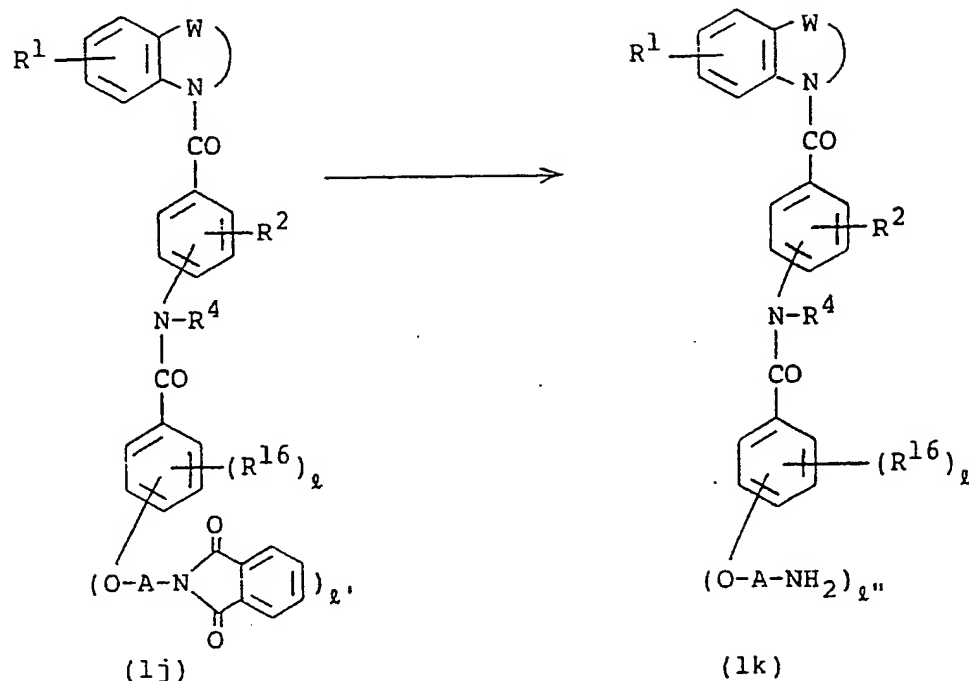
[Reaction Scheme-6B]



wherein R^1 , R^2 , R^4 , R^{16} , X , W , A , ℓ , ℓ' , and ℓ'' are as defined above, and R^{19} is a lower alkanoyloxy, R^{20} is a lower alkanoyloxy, hydroxy or phthalimido, R^{21} is the same as R^{19} and R^{20} , and M is an alkali metal (e.g. potassium, sodium, etc.).

The reaction of the compound (1g) and the compound (14) in the Reaction Scheme-6A and the reaction of the compound (1g) and the compound (15) or (16) in the Reaction Scheme-6B can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. In the reaction, an alkali metal halide (e.g. sodium iodide, potassium iodide, etc.) may be added to the reaction system.

[Reaction Scheme-7]

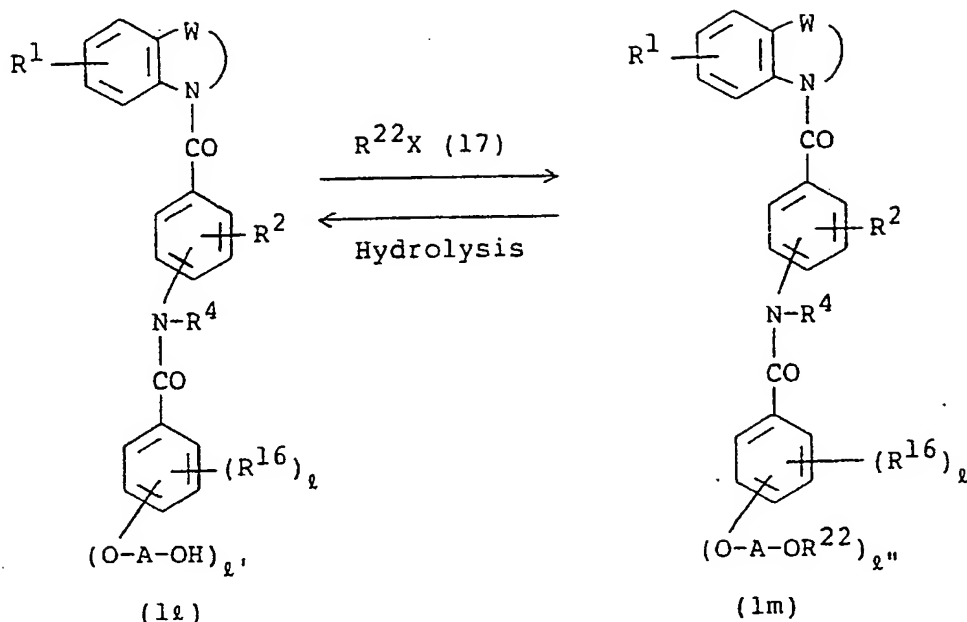


wherein R^1 , R^2 , R^4 , R^{16} , W , l , l' , l'' and A are as defined above.

The reaction of converting the compound (1j) into the compound (1k) can be carried out by reacting the compound (1j) with hydrazine in an appropriate solvent or by hydrolyzing the compound (1j). The solvent used in the reaction with hydrazine includes water and further the same solvent as used in the reaction of the compound (2b) and the compound (4) in the above Reaction Scheme-2. The reaction is usually carried out at a temperature of from room temperature to about 120°C , preferably about 0°C to about 100°C , for about 0.5 to 5 hours. Hydrazine is usually used in an amount of at least 1 mole, preferably about 1 to 5 moles, to 1 mole of the compound (1j).

The hydrolysis can be carried out in an appropriate solvent or without solvent in the presence of an acid or a basic compound. The solvent includes, for example, water, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), ketones (e.g. acetone, methyl ethyl ketone, etc.), ethers (e.g. dioxane, tetrahydrofuran, ethylene glycol dimethyl ether, etc.), fatty acids (e.g. acetic acid, formic acid, etc.), or a mixture of these solvents. The acid includes, for example, mineral acids (e.g. hydrochloric acid, sulfuric acid, hydrobromic acid, etc.) and organic acids (e.g. formic acid, acetic acid, aromatic sulfonic acids, etc.). The basic compound includes, for example, metal carbonates (e.g. sodium carbonate, potassium carbonate, etc.), metal hydroxides (e.g. sodium hydroxide, potassium hydroxide, calcium hydroxide, etc.), and the like. The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from room temperature to about 150°C, for about 10 minutes to 25 hours.

[Reaction Scheme-8]

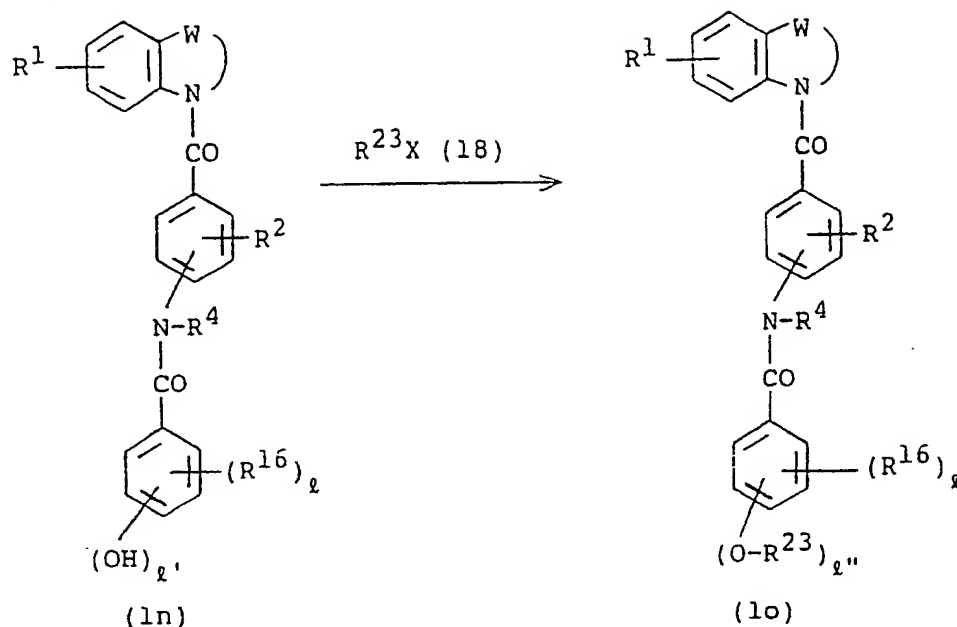


wherein R^1 , R^2 , R^4 , W , R^{16} , ℓ , ℓ' , ℓ'' , X , and A are as defined above, and R^{22} is a lower alkanoyl.

The reaction of the compound (1l) and the compound (17) is carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the Reaction Scheme-4. In the reaction, an alkali metal halide (e.g. sodium iodide, potassium iodide, etc.) may be added to the reaction system.

The reaction of converting the compound (1m) into the compound (1l) can be carried out under the same condition as in the hydrolysis of the compound (1j) in the Reaction Scheme-7.

[Reaction Scheme-9]



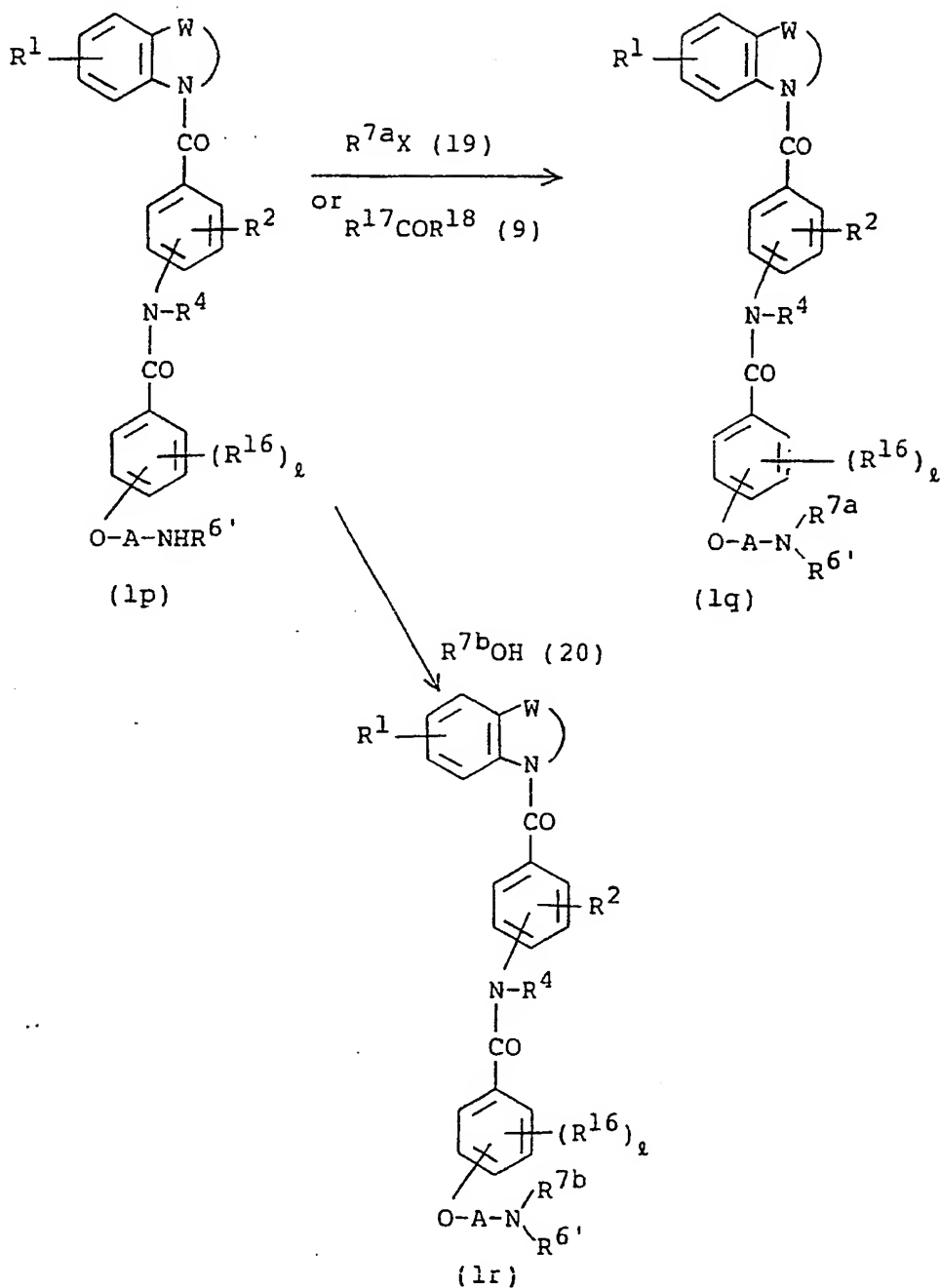
wherein R^1 , R^2 , R^4 , W , R^{16} , x , x' , x'' , and X are as defined above, and R^{23} is a lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a halogen-substituted lower alkyl, a carboxy-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, a lower alkoxy-carbonyl-substituted lower alkyl, a phthalimido-substituted lower alkyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a group of the

formula: $-A-N \begin{smallmatrix} R^6 \\ R^7 \end{smallmatrix}$ (A , R^6 and R^7 are as defined above).

The reaction of the compound (1n) and the compound (18) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. In the reaction, an alkali metal halide (e.g. sodium iodide, potassium iodide, etc.) may be

added to the reaction system.

[Reaction Scheme-10]



wherein R^1 , R^2 , R^4 , W , R^{16} , R^{17} , R^{18} , ϵ , X , and A are as defined above, and $R^{6'}$ is hydrogen atom, a lower alkyl

having optionally a hydroxy substituent, a lower alkanoyl, or benzoyl, R^{7a} is a lower alkyl having optionally a hydroxy substituent, and R^{7b} is a lower alkanoyl or benzoyl.

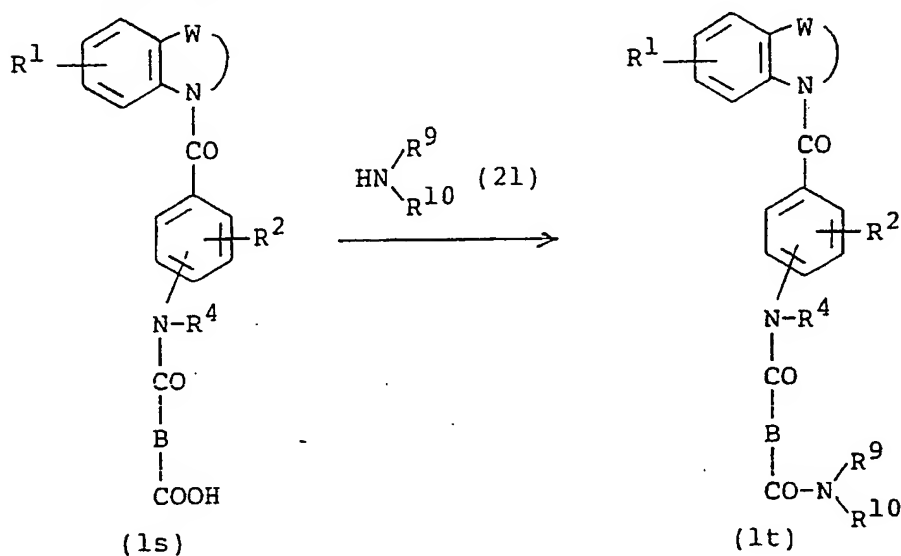
The reaction of the compound (1p) and the compound (19) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4.

The reaction of the compound (1p) and the compound (20) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the Reaction Scheme-1.

Besides, the compound (1r) can also be obtained by reacting the compound (1p) with a compound of the formula: $(R^{7b})_2O$ (R^{7b} is as defined above). The reaction can be carried out in an appropriate solvent or without solvent in the presence or absence, preferably presence, of a basic compound. The solvent includes, for example, the above-mentioned aromatic hydrocarbons, lower alcohols (e.g. methanol, ethanol, propanol, etc.), dimethylformamide, dimethylsulfoxide, and further halogenated hydrocarbons (e.g. chloroform, methylene chloride, etc.), acetone, pyridine, etc. The basic compound includes, for example, tertiary amines (e.g. triethylamine, pyridine, etc.), sodium hydroxide, potassium hydroxide, sodium hydride, and the like. The above reaction can also be carried out in a solvent such as acetic acid or benzoic acid in the presence of a mineral acid (e.g. sulfuric acid, etc.). The acid

anhydride is usually used in an equimolar amount or more, preferably 1 to 10 moles, to 1 mole of the starting compound, and the reaction is usually carried out at a temperature of about 0°C to about 200°C, preferably from about 0°C to about 150°C, for about 0.5 to 15 hours.

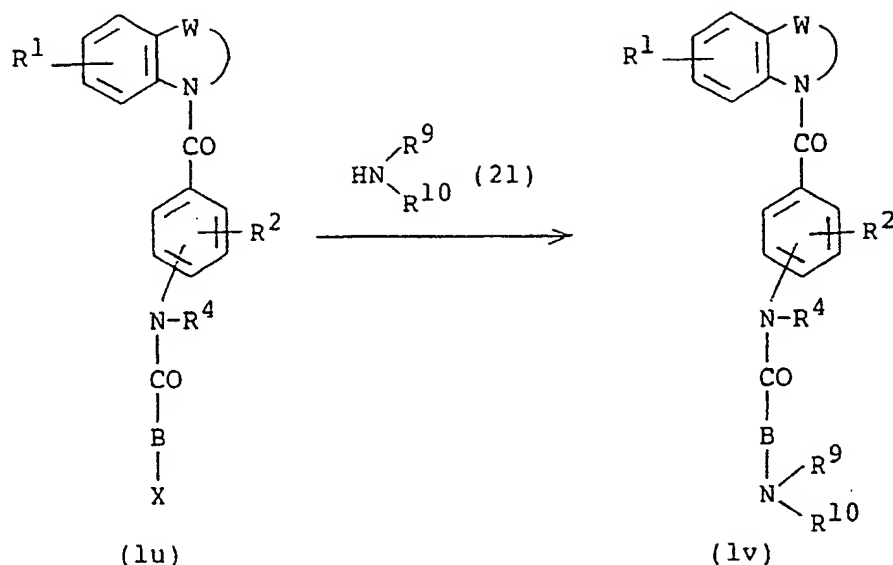
[Reaction Scheme-11]



wherein R^1 , R^2 , R^4 , R^9 , R^{10} , W , and B are as defined above.

The reaction of the compound (1s) and the compound (21) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

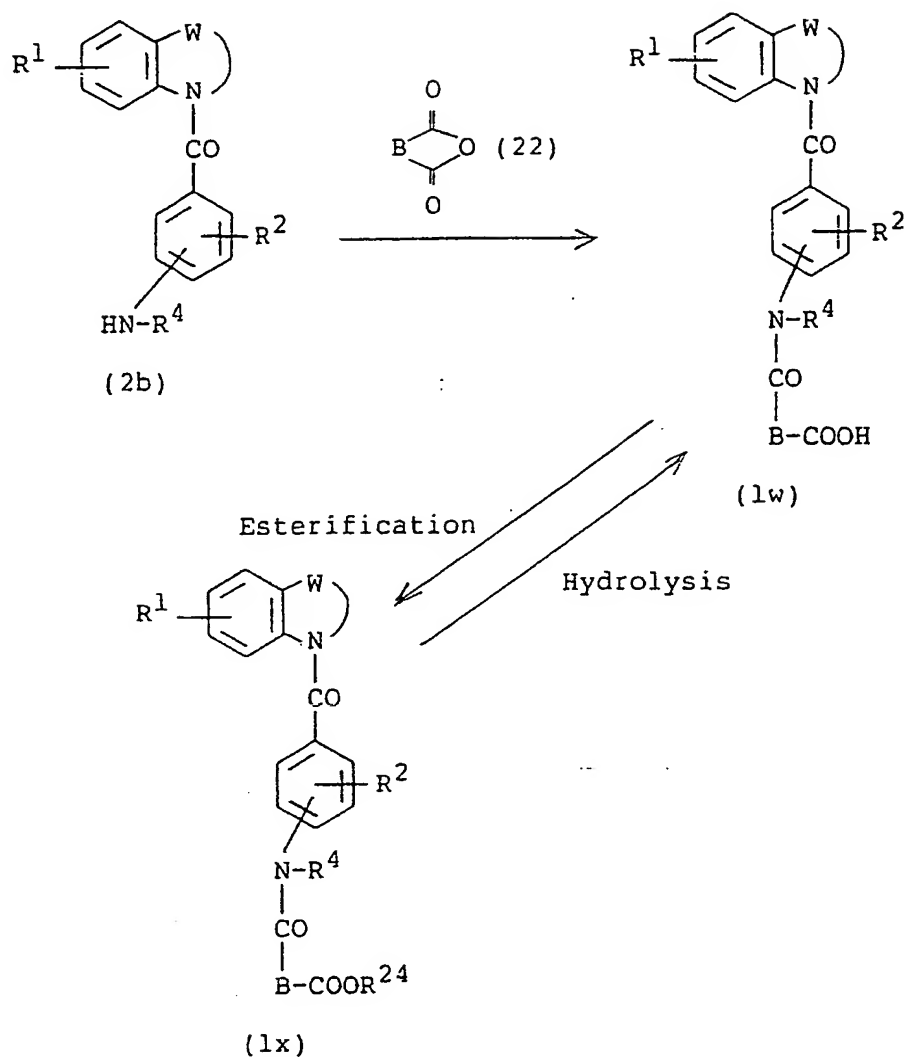
[Reaction Scheme-12]



wherein R^1 , R^2 , R^4 , W , R^9 , R^{10} , X , and B are as defined above.

The reaction of the compound (1u) and the compound (21) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. In the reaction, an alkali metal halide (e.g. sodium iodide, potassium iodide, etc.) may be added to the reaction system.

[Reaction Scheme-13]



wherein R^1 , R^2 , R^4 , W , and B are as defined above, and R^{24} is a lower alkyl.

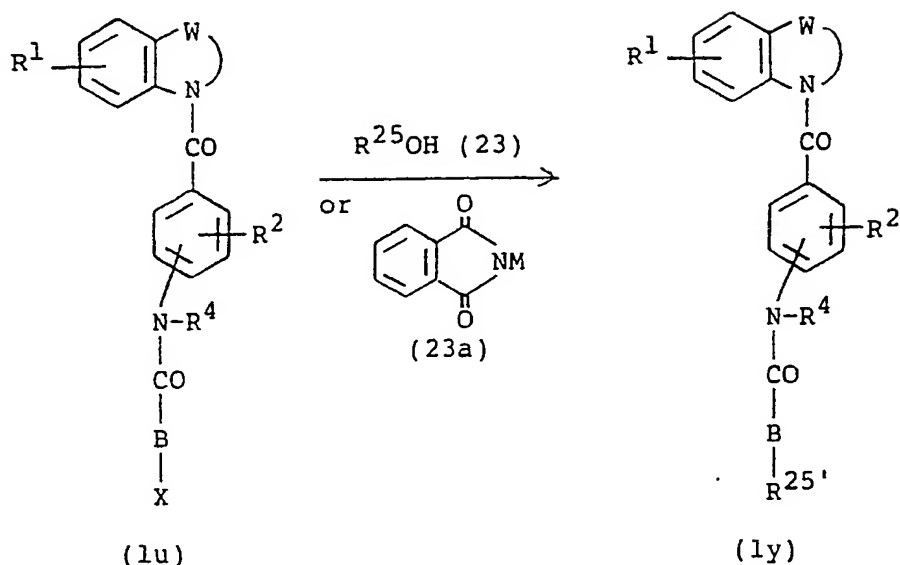
The reaction of the compound (2b) and the compound (22) can be carried out in an appropriate inert solvent. The inert solvent includes, for example, aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), ethers (e.g. tetrahydrofuran, dioxane, diethylene glycol dimethyl

ether, etc.), lower alcohols (e.g. methanol, ethanol, isopropanol, butanol, etc.), halogenated hydrocarbons (e.g. dichloromethane, chloroform, carbon tetrachloride, etc.), acetic acid, ethyl acetate, acetonitrile, dimethylsulfoxide, dimethylformamide, hexamethylphosphoric triamide, and the like. The amount of the compound (2b) and the compound (22) is not critical, but the compound (22) is usually used in an amount of at least one mole, preferably 1 to 2 moles, to 1 mole of the compound (2b). The reaction is usually carried out at a temperature of from about 0°C to about 150°C, preferably from about 0°C to about 100°C, for about 30 minutes to about 10 hours.

The esterification of the compound (1w) is usually carried out by reacting the starting compound with an alcohol (e.g. methanol, ethanol, isopropanol, etc.) in the presence of a mineral acid (e.g. hydrochloric acid, sulfuric acid, etc.) and a halogenating agent (e.g. thionyl chloride, phosphorus oxychloride, phosphorus pentachloride, phosphorus trichloride, etc.) at a temperature of 0°C to 150°C, preferably 50°C to 100°C, for about 1 to 10 hours.

The hydrolysis of the compound (1x) can be carried out under the same conditions as in the hydrolysis of the compound (1j) in the Reaction Scheme-7.

[Reaction Scheme-14]



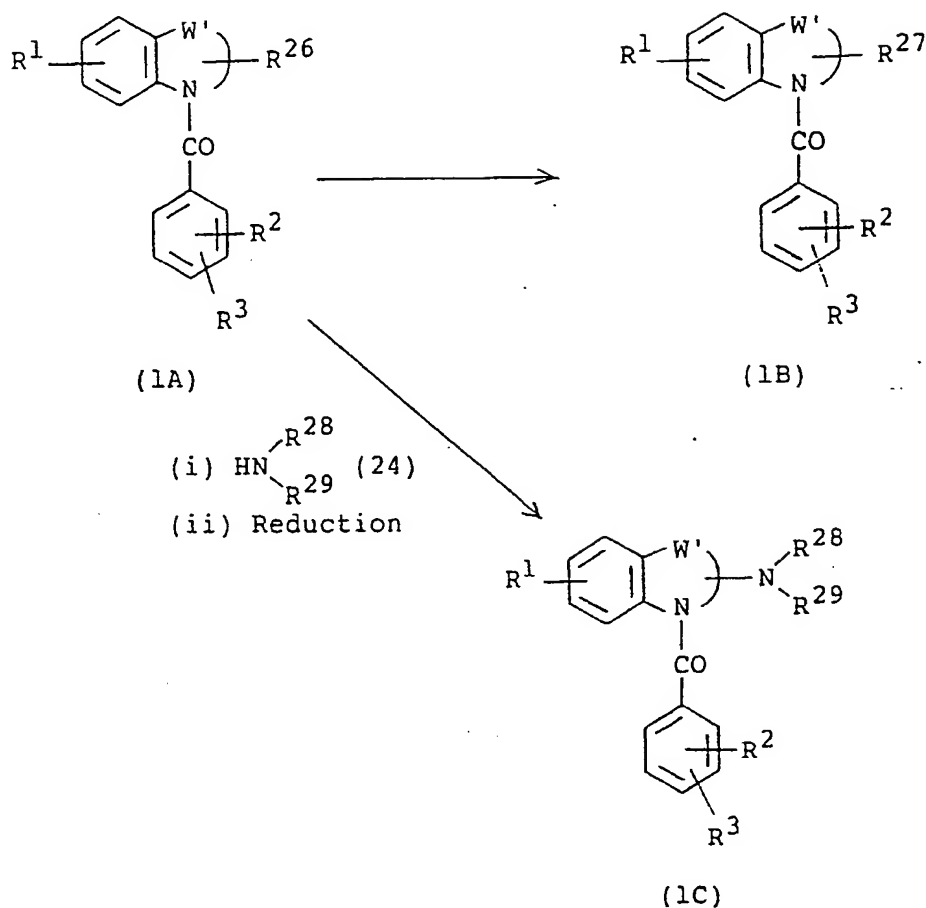
wherein R^1 , R^2 , R^4 , W , B , M , and X are as defined above, and R^{25} is a phenyl which has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, or naphthyl, and $\text{R}^{25'}$ is a phenoxy which has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, naphthyloxy or phthalimido.

The reaction of the compound (1u) and the compound (23) or (23a) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

The compound (1y) wherein $\text{R}^{25'}$ is phthalimido can be converted into the compound (1y) wherein $\text{R}^{25'}$ is amino under the same conditions as in the reaction of converting the compound (1j) into the compound (1k) in the above

Reaction Scheme-7.

[Reaction Scheme-15]



wherein R^1 , R^2 and R^3 are as defined above, and R^{26} is oxo, R^{27} is hydroxy, and W' is the same as W , provided that the substituents on the group $-(\text{CH}_2)_p-$ or $-\text{CH}=\text{CH}-(\text{CH}_2)_q-$ are 0 to 2, and R^{28} and R^{29} are the same or different and are each hydrogen atom, a lower alkenyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a cyano-substituted

lower alkyl, a lower alkoxy carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl which has optionally a phenyl-lower alkyl substituent, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a lower alkyl, or R^{28} and R^{29} may bind together with the nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom, which heterocyclic ring may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl, or a lower alkanoyl.

The conversion of the compound (1A) into the compound (1B) is carried out by reduction thereof. The reducing reaction is preferably carried out by using a hydrogenating reducing agent (e.g. lithium aluminum hydride, sodium boro hydride, diborane, etc.). The reducing agent is usually used in an amount of at least one mole, preferably 1 to 15 moles, to 1 mole of the starting compound. The reducing reaction is usually carried out in an appropriate solvent, for example, water, alcohols (e.g. methanol, ethanol, isopropanol, etc.), ethers (e.g. tetrahydrofuran, diethyl ether, diisopropyl ether, diglyme, etc.), or a mixture of these solvents, at a temperature of from about -60°C to about 150°C , preferably about -30°C to about 100°C , for about 10 minutes to 15 hours. When lithium aluminum

hydride or diborane is used as the reducing agent, it is preferable to use an anhydrous solvent such as tetrahydrofuran, diethyl ether, diisopropyl ether, diglyme, etc.

The reaction of converting the compound (1A) into the compound (1C) is usually carried out in an appropriate solvent or without solvent in the presence or absence of a dehydrating agent. The solvent includes, for example, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), halogenated hydrocarbons (e.g. dichloromethane, dichloroethane, chloroform, carbon tetrachloride, etc.), aprotic polar solvents (e.g. dimethylformamide, dimethylacetamide, N-methylpyrrolidone, etc.), or a mixture of these solvents. The dehydrating agent includes, for example, conventional drying agent used for dehydrating solvents (e.g. molecular sieves, etc.), mineral acids (e.g. hydrochloric acid, sulfuric acid, borane trifluoride, etc.), organic acids (e.g. p-toluenesulfonic acid, etc.), and the like. The reaction is usually carried out at a temperature of from room temperature to about 250°C, preferably from about 50°C to about 200°C, for about 1 to 48 hours. The amount of the compound (24) is not critical, but it is usually used at least in an equivalent amount, preferably equimolar to largely excess to the amount of the compound (1A). The dehydrating agent is preferably used in a largely excess amount in case of the drying agent and in a catalytic amount in case of the acid.

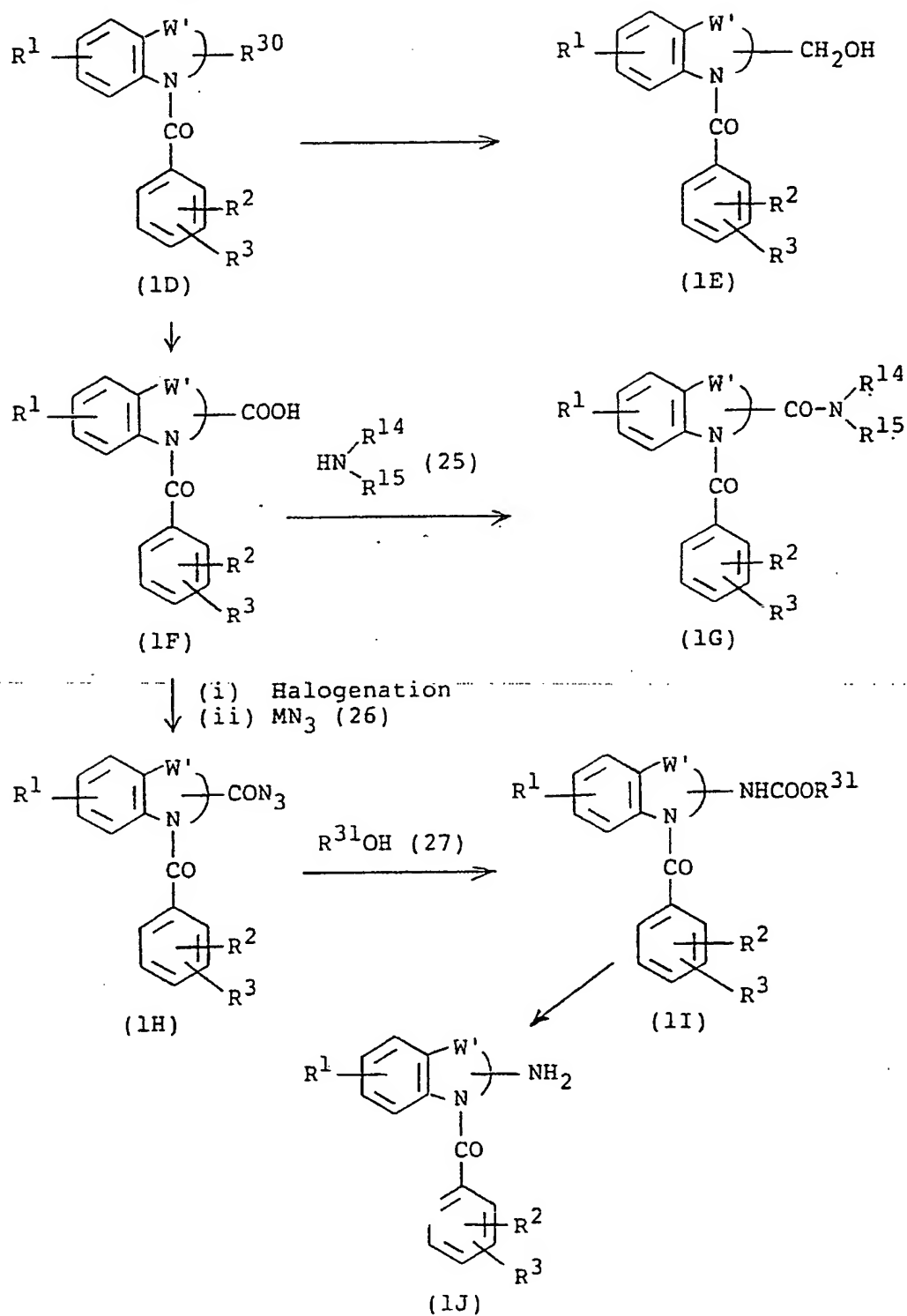
The subsequent reducing reaction can be carried out by various methods, for example by catalytically hydrogenating the compound in an appropriate solvent in the presence of a catalyst. The solvent includes, for example, water, acetic acid, alcohols (e.g. methanol, ethanol, isopropanol, etc.), hydrocarbons (e.g. hexane, cyclohexane, etc.), ethers (e.g. diethylene glycol dimethyl ether, dioxane, tetrahydrofuran, diethyl ether, etc.), esters (e.g. ethyl acetate, methyl acetate, etc.), aprotic polar solvents (e.g. dimethylformamide, etc.), or a mixture of these solvents. The catalyst includes, for example, palladium, palladium black, palladium-carbon, platinum, platinum oxide, copper chromite, Raney nickel, and the like. The catalyst is usually used in an amount of 0.02 to 1 part by weight to 1 part by weight of the starting compound. The reaction is usually carried out at a temperature of from about -20°C to about 100°C, preferably about 0°C to about 70°C, under a hydrogen atmospheric pressure of 1 to 10 atm. for about 0.5 to 20 hours.

Although the reducing reaction can be carried out under the above conditions, it is preferably carried out by using a hydrogenating reducing agent. The hydrogenating reducing agent includes, for example, lithium aluminum hydride, sodium borohydride, diborane, etc., and it is usually used in an amount of at least one mole, preferably 1 to 10 moles, to 1 mole of the compound (1A). The reaction is usually carried out in an appropriate solvent, such as

water, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), ethers (e.g. tetrahydrofuran, diethyl ether, diglyme, etc.), dimethylformamide, or a mixture of these solvents, at a temperature of about -60°C to about 50°C , preferably about -30°C to room temperature, for about 10 minutes to about 5 hours. When lithium aluminum hydride or diborane is used as the reducing agent, it is preferable to use an anhydrous solvent such as diethyl ether, tetrahydrofuran, diglyme, etc.

The compound (1C) wherein at least one of R^{28} and R^{29} is hydrogen atom can be converted into the compound (1C) wherein at least one of R^{28} and R^{29} is a lower alkyl by reacting the compound (1C) with the compound (8) or the compound (9) under the same conditions as in the reaction of the compound (7) and the compound (8) or (9) in the above Reaction Scheme-4.

[Reaction Scheme-16]



wherein R^1 , R^2 , R^3 , R^{14} , R^{15} , W' , and M are as defined above, and R^{31} is a phenyl-lower alkyl, and R^{30} is a lower alkoxy carbonyl.

The reaction of converting the compound (1D) into the compound (1E) can be carried out under the same conditions as in the reaction of converting the compound (1A) into the compound (1B) in the above Reaction Scheme-15.

The reaction of converting the compound (1D) into the compound (1F) can be carried out under the same conditions as in the hydrolysis reaction of the compound (1j) in the above Reaction Scheme-7.

The reaction of the compound (1F) and the compound (25) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The halogenation of the compound (1F) can be carried out under a conventional condition for halogenation of a carboxylic acid. The reaction of the thus-obtained carboxylic acid halide of the compound (1F) with the compound (26) is carried out in an appropriate solvent in the presence or absence of a basic compound. The solvent includes, for example, halogenated hydrocarbons (e.g. methylene chloride, chloroform, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), ethers (e.g. diethyl ether, tetrahydrofuran, dimethoxyethane, etc.), esters (e.g. methyl acetate, ethyl acetate, etc.), aprotic polar solvents

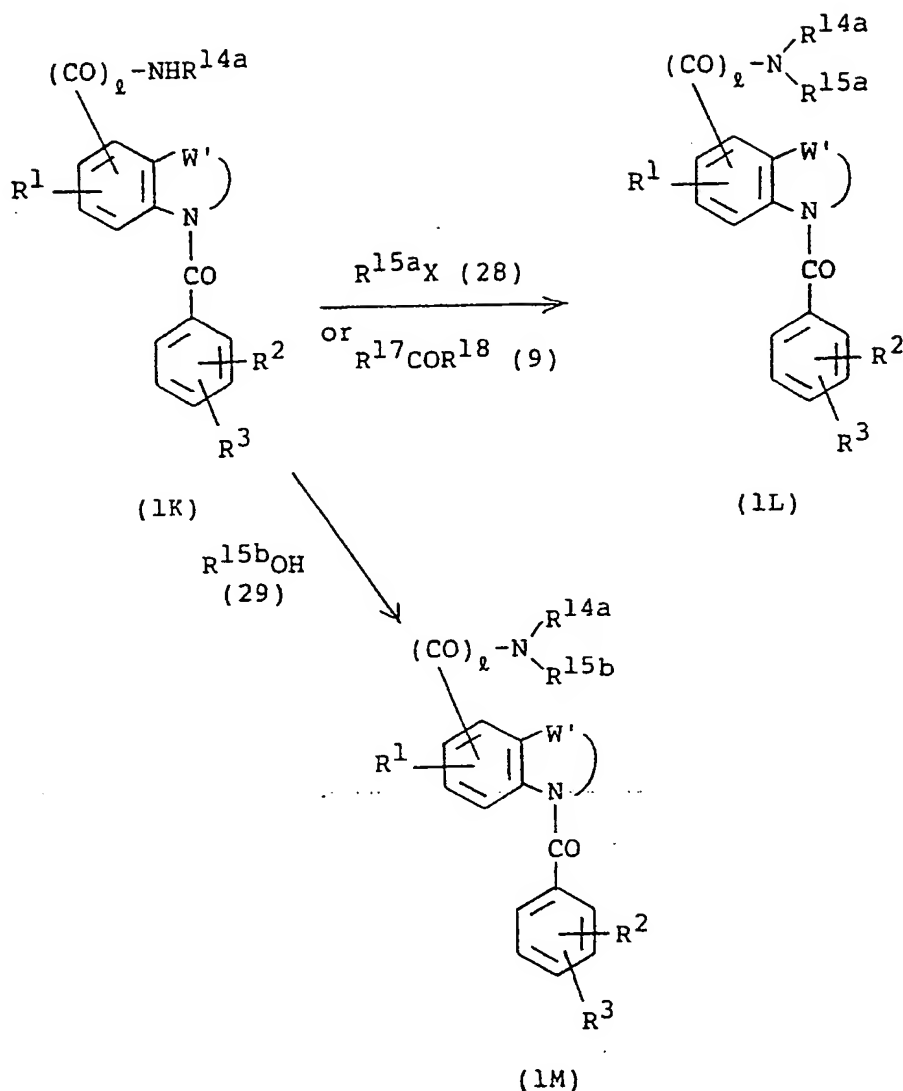
(e.g. N,N-dimethylformamide, dimethylsulfoxide, hexamethylphosphoric triamide, etc.), alcohols (e.g. methanol, ethanol, propanol, butanol, 3-methoxy-1-butanol, ethyl cellosolve, methyl cellosolve, etc.), pyridine, acetone, acetonitrile, water, or a mixture of these solvents. The basic compound includes, for example, organic bases such as triethylamine, trimethylamine, pyridine, dimethylaniline, N-methylmorpholine, DBN, DBU, DABCO, etc., inorganic bases such as potassium carbonate, sodium carbonate, potassium hydroxide, sodium hydroxide, potassium hydride, sodium hydride, silver carbonate, alcoholates (e.g. sodium methylate, sodium ethylate, etc.), and the like. The compound (26) is usually used in an amount of at least 1 mole, preferably 1 to 1.5 mole, to 1 mole of the carboxylic acid halide of the compound (1F). The reaction is usually carried out at a temperature of from -30°C to about 180°C, preferably from about 0°C to about 150°C, for about 5 minutes to 30 hours.

The reaction of the compound (1H) and the compound (27) is carried out in an appropriate solvent or without solvent at a temperature of from about 0°C to about 200°C, preferably from room temperature to about 150°C. The solvent includes the same solvents as used in the above reaction of the carboxylic acid halide of the compound (1F) and the compound (26). The compound (27) is preferably used in an amount largely excess to the the compound (1H). The reaction is usually completed in a reaction time of about 1

to 5 hours.

The reaction of converting the compound (1I) into the compound (1J) can be carried out by reducing the compound. The reducing reaction is usually carried out by catalytically hydrogenating the compound in an appropriate solvent in the presence of a catalyst. The solvent includes, for example, water, acetic acid, alcohols (e.g. methanol, ethanol, isopropanol, etc.), hydrocarbons (e.g. hexane, cyclohexane, etc.), ethers (e.g. dioxane, tetrahydrofuran, diethyl ether, diethylene glycol dimethyl ether, etc.), esters (e.g. ethyl acetate, methyl acetate, etc.), aprotic polar solvents (e.g. N,N-dimethylformamide, etc.), acetic acid, or a mixture of these solvents. The catalyst includes, for example, palladium, palladium black, palladium-carbon, platinum, platinum oxide, copper chromite, Raney nickel, and the like. The catalyst is usually used in an amount of 0.02 to 1 part by weight to 1 part by weight of the starting compound. The reaction is usually carried out at a temperature of from about -20°C to about 100°C, preferably about 0°C to about 80°C, under a hydrogen atmospheric pressure of 1 to 10 atm. for about 0.5 to 20 hours.

[Reaction Scheme-17]



wherein R^1 , R^2 , R^3 , W' , ϵ , R^{17} , R^{18} , and X are as defined above, and R^{14a} is hydrogen atom, a lower alkyl, a lower alkanoyl, a lower alkenyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl,

benzoyl, a lower alkoxy carbonyl, anilinocarbonyl, an amino-carbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxy carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent, a halogen-substituted lower alkanoyl, an imiazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxy carbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxy carbonyl, R^{15a} is a lower alkyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, a cyano-substituted lower alkyl, a lower alkoxy carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent, an amino-carbonyl-lower alkyl having optionally a lower alkyl substituent, or a lower alkenyl, and R^{15b} is a lower alkanoyl, a phenyl-lower alkoxy carbonyl, benzoyl, a lower alkoxy carbonyl, a halogen-substituted lower alkanoyl, an

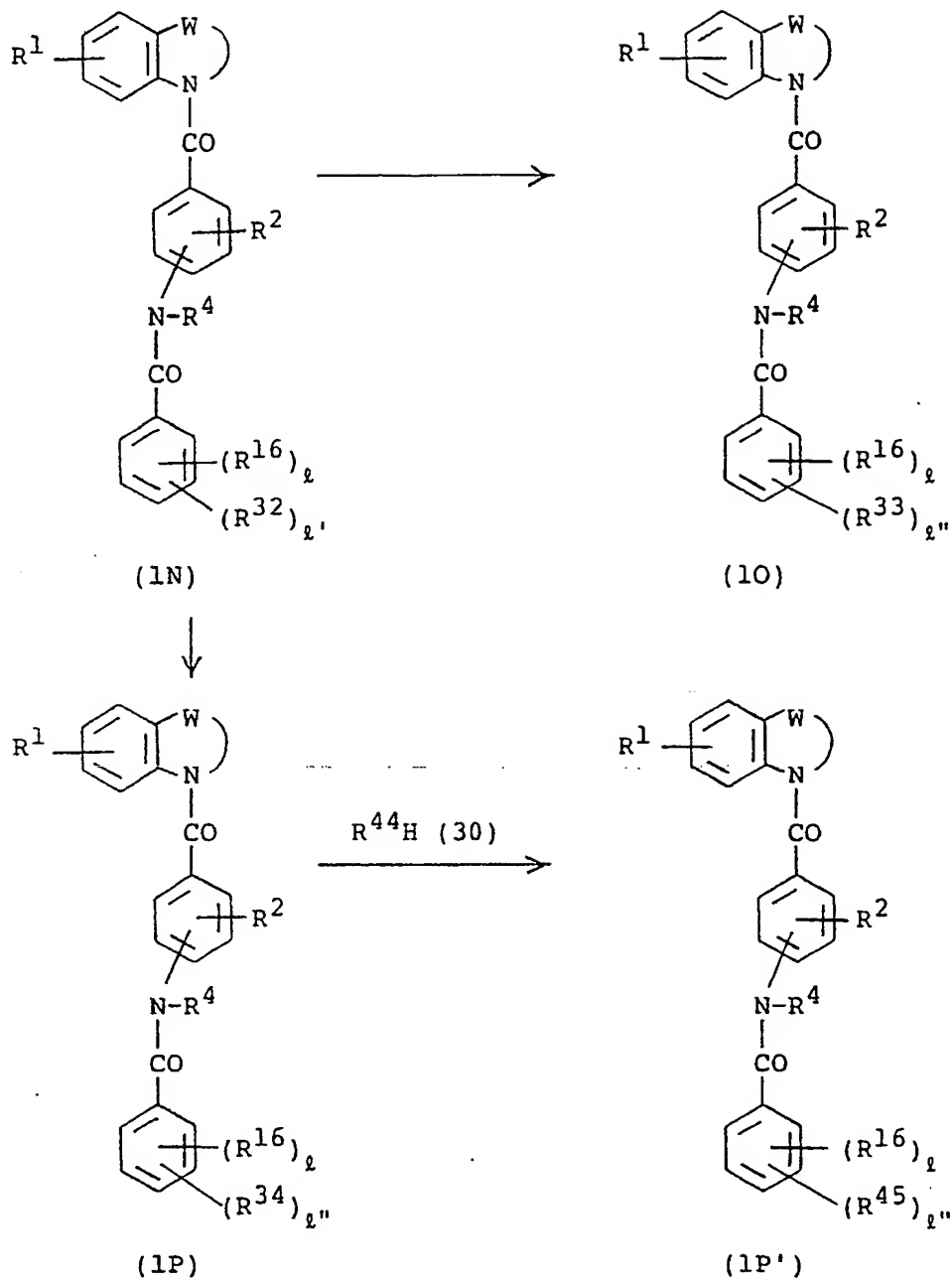
imidazolyl-substituted lower alkanoyl, or an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxycarbonyl.

The reaction of the compound (1K) and the compound (28) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4.

The reaction of the compound (1K) and the compound (29) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1. The compound (1M) can also be obtained by reacting the compound (1K) with a compound of the formula $(R^{15b})_2O$ (wherein R^{15b} is as defined above). The reaction can be carried out under the same conditions as in the reaction of the compound (1p) and the compound of the formula: $(R^{7b})_2O$ as described hereinbefore.

The compound (1M) wherein R^{15b} is formyl can also be prepared by reacting the compound (1K) with a formate of the formula: $HCOOR^{82}$ (R^{82} is a lower alkyl). The reaction is usually carried out in the solvent as used in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4 or without solvent, at a temperature of about 0°C to about 200°C, preferably about 0°C to about 170°C, for about 30 minutes to about 30 hours. The formate is preferably used in a largely excess amount to the compound (1K).

[Reaction Scheme-18]



wherein R^1 , R^2 , R^4 , R^{16} , W , ℓ , ℓ' and ℓ'' are as defined above, and R^{32} is a lower alkoxycarbonyl-substituted lower alkoxy, R^{33} is a carbamoyl-substituted lower alkoxy, R^{34} is

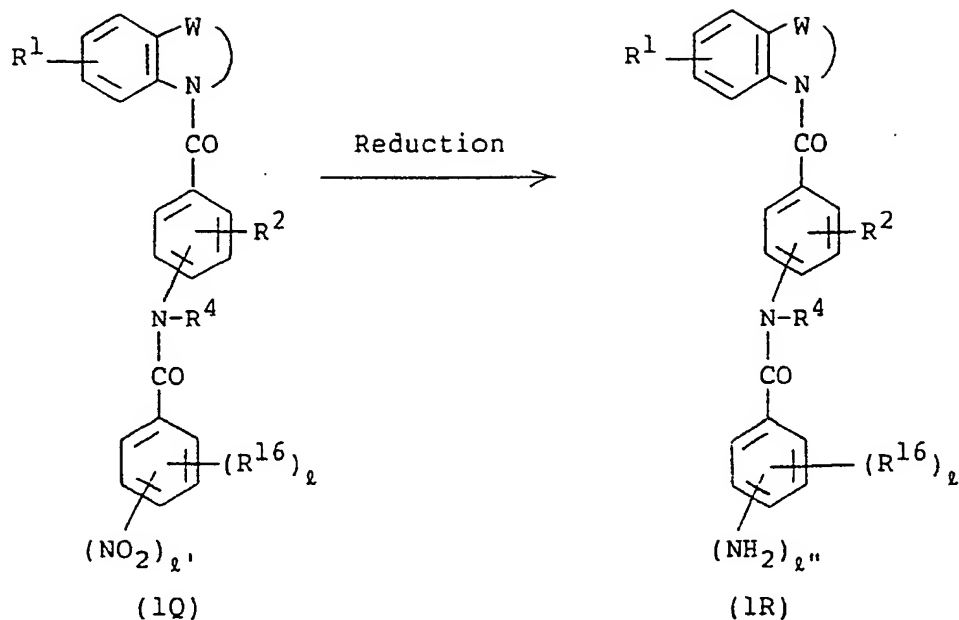
a carboxy-substituted lower alkoxy, R^{44} is an amino having optionally a lower alkyl substituent, and R^{45} is an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent.

The conversion of the compound (1N) into the compound (1O) can be carried out by reacting the compound with aqueous ammonia in an appropriate solvent in an autoclave. The solvent includes the same solvents as used in the reaction of the carboxylic acid halide and the amine (2) in the above Reaction Scheme-1. The aqueous ammonia is used in a largely excess amount to the compound (1N). The reaction proceeds advantageously by adding an ammonium halide (e.g. ammonium chloride, etc.) to the reaction system. The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from room temperature to about 150°C, for about 1 to 10 hours.

The reaction of converting the compound (1N) into the compound (1P) can be carried out under the same conditions as in the hydrolysis of the compound (1j) in the above Reaction Scheme-7.

The reaction of the compound (1P) and the compound (30) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

[Reaction Scheme-19]



wherein R^1 , R^2 , R^4 , R^{16} , W , l , l' and l'' are as defined above.

The reducing reaction in the above reaction scheme is usually carried out, for example, (i) with a reducing catalyst in an appropriate solvent or (ii) with a reducing agent such as a mixture of a metal or metal salt with an acid, or a mixture of a metal or metal salt with an alkali metal hydroxide, a sulfide or an ammonium salt in an appropriate inert solvent.

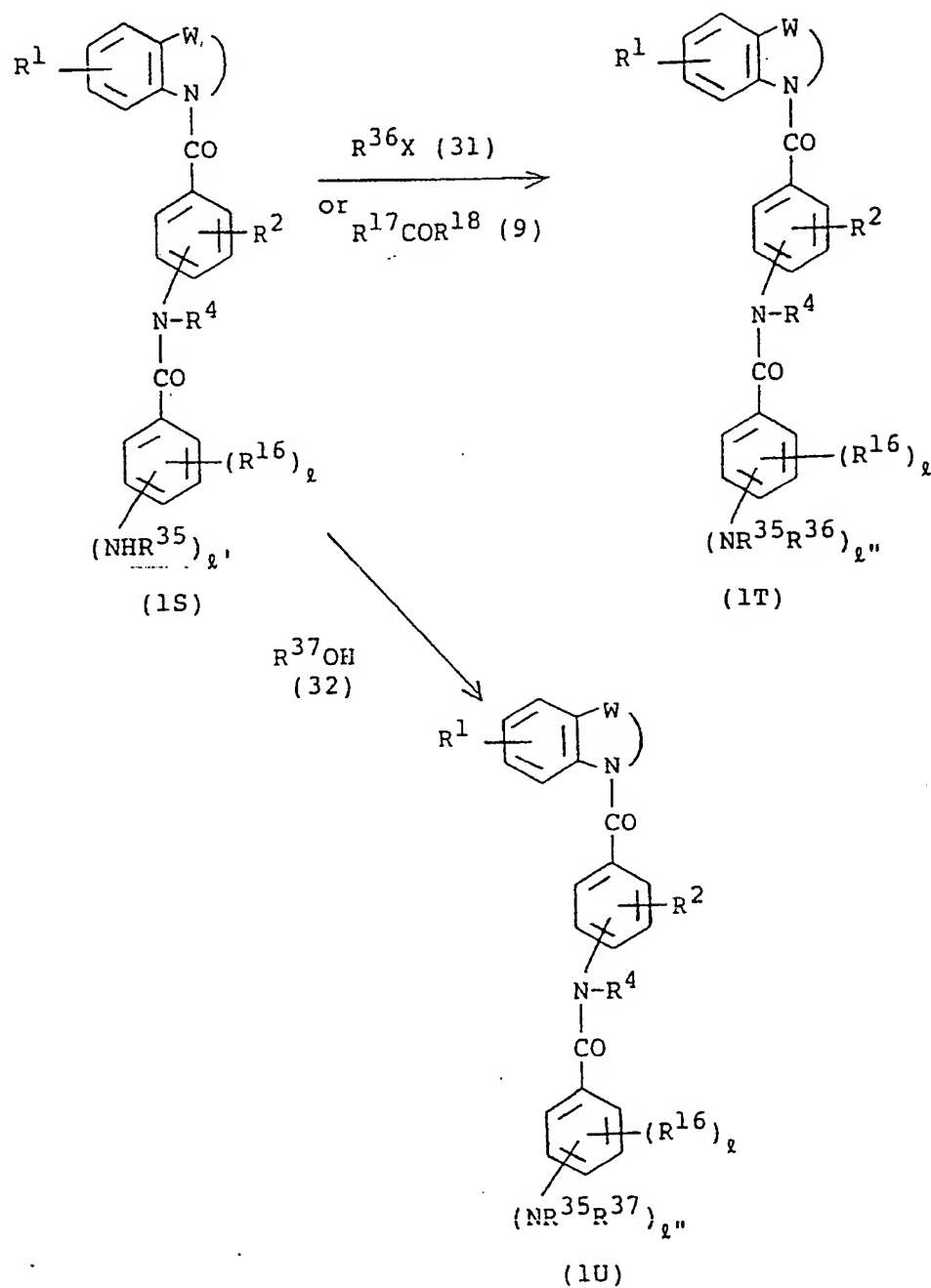
In case of using a reducing catalyst, the solvent includes, for example, water, acetic acid, alcohols (e.g. methanol, ethanol, isopropanol, etc.), hydrocarbons (e.g. hexane, cyclohexane, etc.), ethers (e.g. dioxane, tetrahydrofuran, diethyl ether, diethylene glycol dimethyl ether, etc.), esters (e.g. ethyl acetate, methyl acetate, etc.),

aprotic polar solvents (e.g. N,N-dimethylformamide, etc.), or a mixture of these solvents. The catalyst includes, for example, palladium, palladium black, palladium-carbon, platinum, platinum oxide, copper chromite, Raney nickel, and the like. The catalyst is usually used in an amount of 0.02 to 1 part by weight to 1 part by weight of the starting compound. The reaction is usually carried out at a temperature of from about -20°C to about 150°C , preferably about 0°C to about 100°C , under a hydrogen pressure of 1 to 10 atm. for about 0.5 to 10 hours. In the reaction, an acid such as hydrochloric acid may optionally added to the reaction system.

In case of the above method (ii), the reducing agent includes a mixture of iron, zinc, tin or stannous chloride and a mineral acid (e.g. hydrochloric acid, sulfuric acid, etc.), or a mixture of iron, ferrous sulfate, zinc or tin and an alkali metal hydroxide (e.g. sodium hydroxide, etc.), a sulfide (e.g. ammonium sulfide, etc.), aqueous ammonia, or an ammonium salt (e.g. ammonium chloride, etc.). The inert solvent includes, for example water, acetic acid, methanol, ethanol, dioxane, and the like. The reducing reaction conditions are determined depending on the kinds of the reducing agent, but in case of using a reducing agent comprising stannous chloride and hydrochloric acid, for example, it is preferably carried out at a temperature of about 0°C to room temperature for about 0.5 to 10 hours. The reducing agent is usually used in an

amount of at least one mole, preferably 1 to 5 moles, to 1 mole of the starting compound.

[Reaction Scheme-20]



wherein R^1 , R^2 , R^4 , R^{16} , R^{17} , R^{18} , ℓ , ℓ' , ℓ'' and W are as

defined above, and R^{36} is a lower alkyl, R^{37} is a lower alkanoyl, and R^{35} is hydrogen atom, a lower alkyl or a lower alkanoyl.

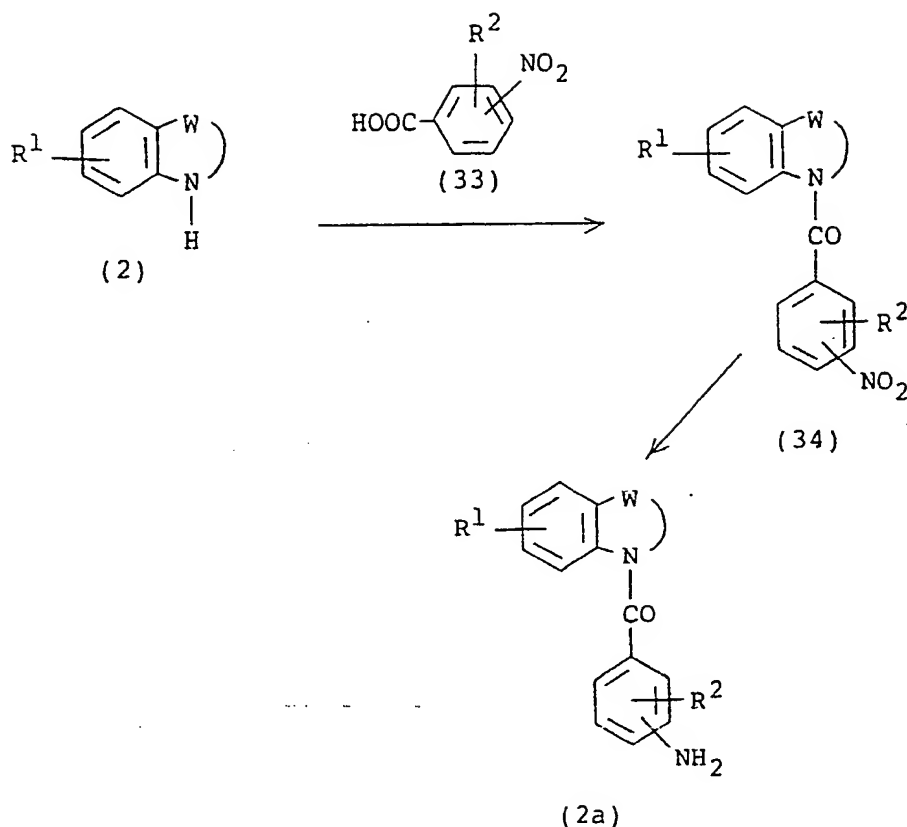
The reaction of the compound (1S) and the compound (31) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4.

The reaction of the compound (1S) and the compound (32) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1. Besides, the compound (1U) can also be obtained by reacting the compound (1S) with a compound of the formula: $(R^{37})_2O$ (R^{37} is as defined above). The reaction is carried out under the same conditions as in the above reaction of the compound (1p) and a compound of the formula: $(R^{7b})_2O$.

The compound (1) wherein R^8 is a phenyl-lower alkoxy carbonyl can be converted into the compound (1) wherein R^8 is hydrogen atom in the same manner as in the reaction of converting the compound (1I) into the compound (1J) in the above Reaction Scheme-16.

Other derivatives of the starting compound (2) can be prepared, for example, by the process shown in the following reaction scheme.

[Reaction Scheme-21]



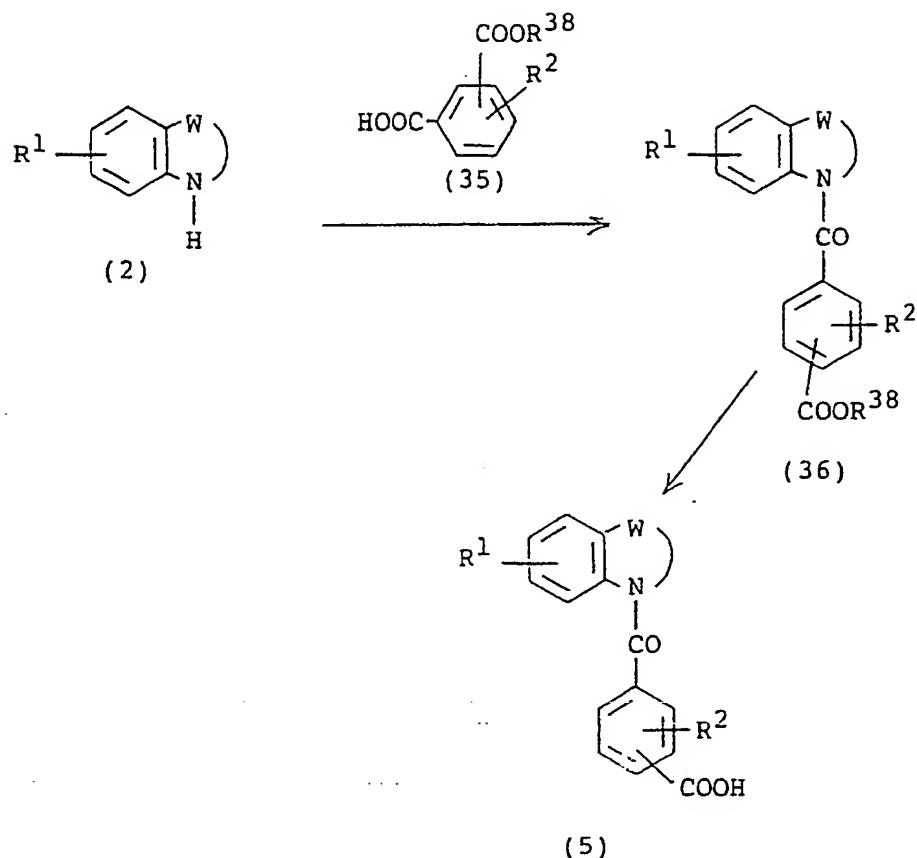
wherein R^1 , R^2 , and W are as defined above.

The reaction of the compound (2) and the compound (33) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of converting the compound (34) into the compound (2a) can be carried out under the same conditions as in the reducing reaction in the above Reaction Scheme-19.

The starting compound (5) can be prepared, for example, by the process of the following reaction scheme.

[Reaction Scheme-22]

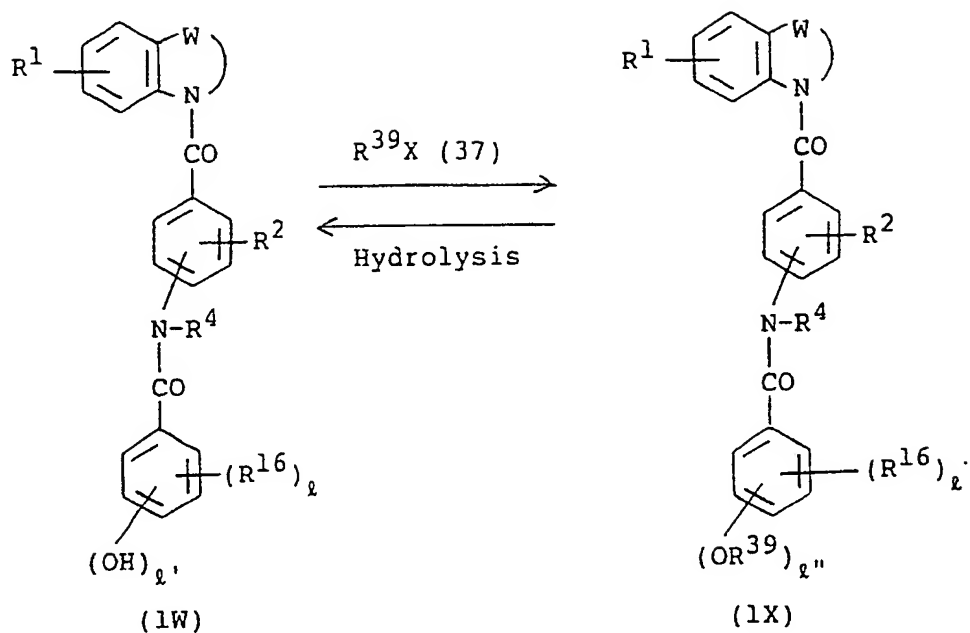


wherein R^1 , R^2 , and W are as defined above, and R^{38} is a lower alkyl.

The reaction of the compound (2) and the compound (35) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of converting the compound (36) into the compound (5) can be carried out under the same conditions as in the hydrolysis reaction in the above Reaction Scheme-7.

[Reaction Scheme-23]

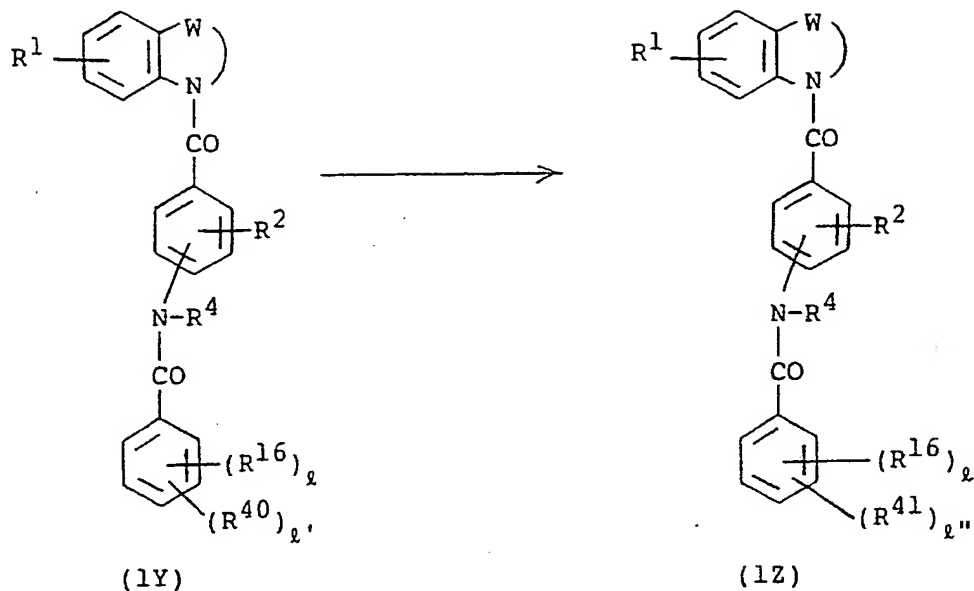


wherein R^1 , R^2 , R^4 , R^{16} , l , l' , l'' , X , and W are as defined above, and R^{39} is a lower alkanoyl.

The reaction of the compound (1W) and the compound (37) can be carried out under the same conditions as in the reaction of the compound (1n) and the compound (18) in the above Reaction Scheme-9.

The hydrolysis reaction of the compound (1X) can be carried out under the same conditions as in the hydrolysis of the compound (1j) in the above Reaction Scheme-7.

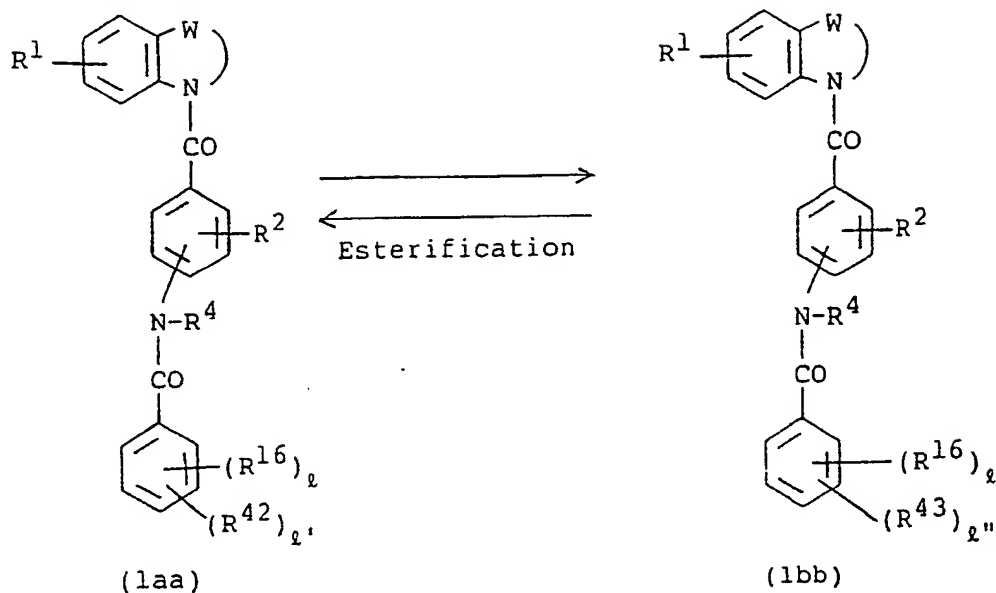
[Reaction Scheme-24]



wherein R¹, R², R⁴, R¹⁶, ϵ , ϵ' , ϵ'' , and W are as defined above, R⁴⁰ is a lower alkanoyl, and R⁴¹ is a hydroxy-substituted lower alkyl.

The reaction of converting the compound (1Y) into the compound (1Z) can be carried out under the same conditions as in the reaction of converting the compound (1A) into the compound (1B) in the above Reaction Scheme-15.

[Reaction Scheme-25]

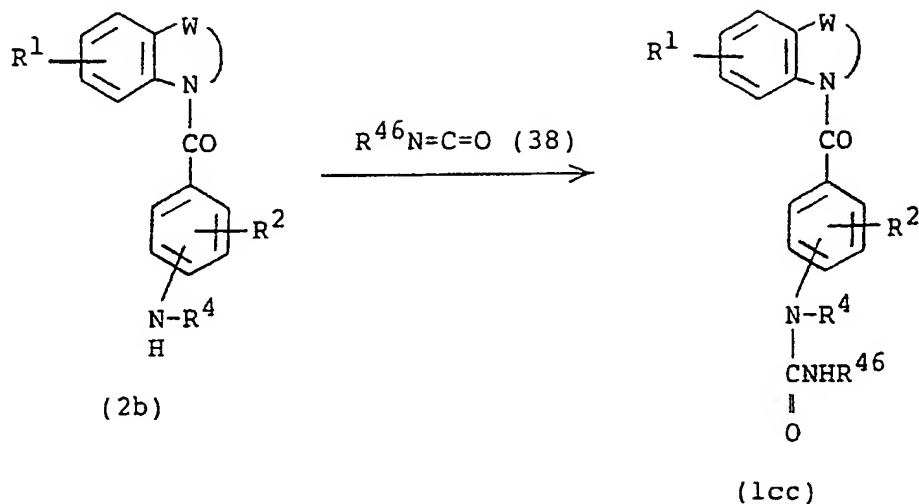


wherein R^1 , R^2 , R^4 , R^{16} , ℓ , ℓ' , ℓ'' , and W are as defined above, R^{42} is a lower alkoxy carbonyl and R^{43} is carboxyl.

The reaction of converting the compound (1aa) into the compound (1bb) can be carried out under the same conditions as in the hydrolysis of the compound (1j) in the above Reaction Scheme-7.

The esterification reaction of the compound (1bb) can be carried out under the same conditions as in the esterification of the compound (1w) in the above Reaction Scheme-13.

[Reaction Scheme-26]

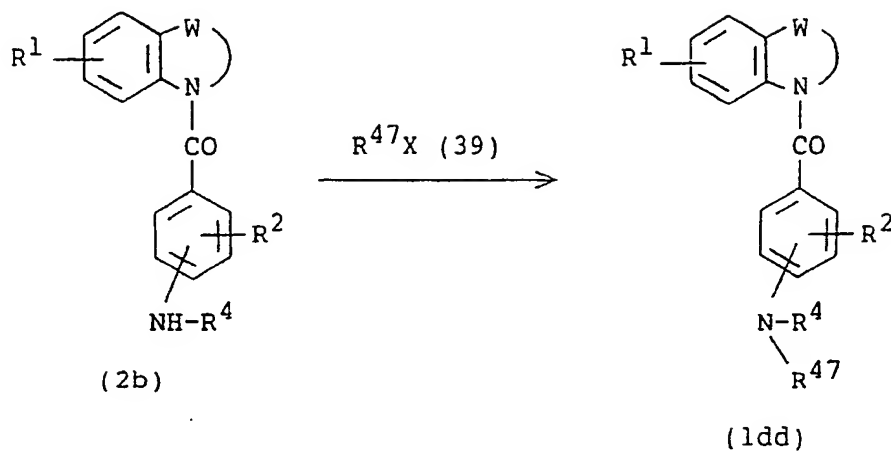


wherein R^1 , R^2 , R^4 , and W are as defined above, and R^{46} is a phenyl having optionally a lower alkyl substituent.

The reaction of the compound (2b) and the compound (38) is usually carried out in an appropriate solvent or without solvent in the presence or absence, preferably in the absence, of a basic compound. The solvent and basic compound are the same as those used in the reaction of the carboxylic acid halide and the amine (2) in the above Reaction Scheme-1.

The compound (38) is usually used in an amount of about 1 to 5 moles, preferably about 1 to 3 moles, to 1 mole of the compound (2b). The reaction is usually carried out at a temperature of from about 0°C to about 200°C , preferably from room temperature to about 150°C , for about 5 minutes to about 30 hours. In the reaction, a boron compound (e.g. boron trifluoride etherate, etc.) may be added to the reaction system.

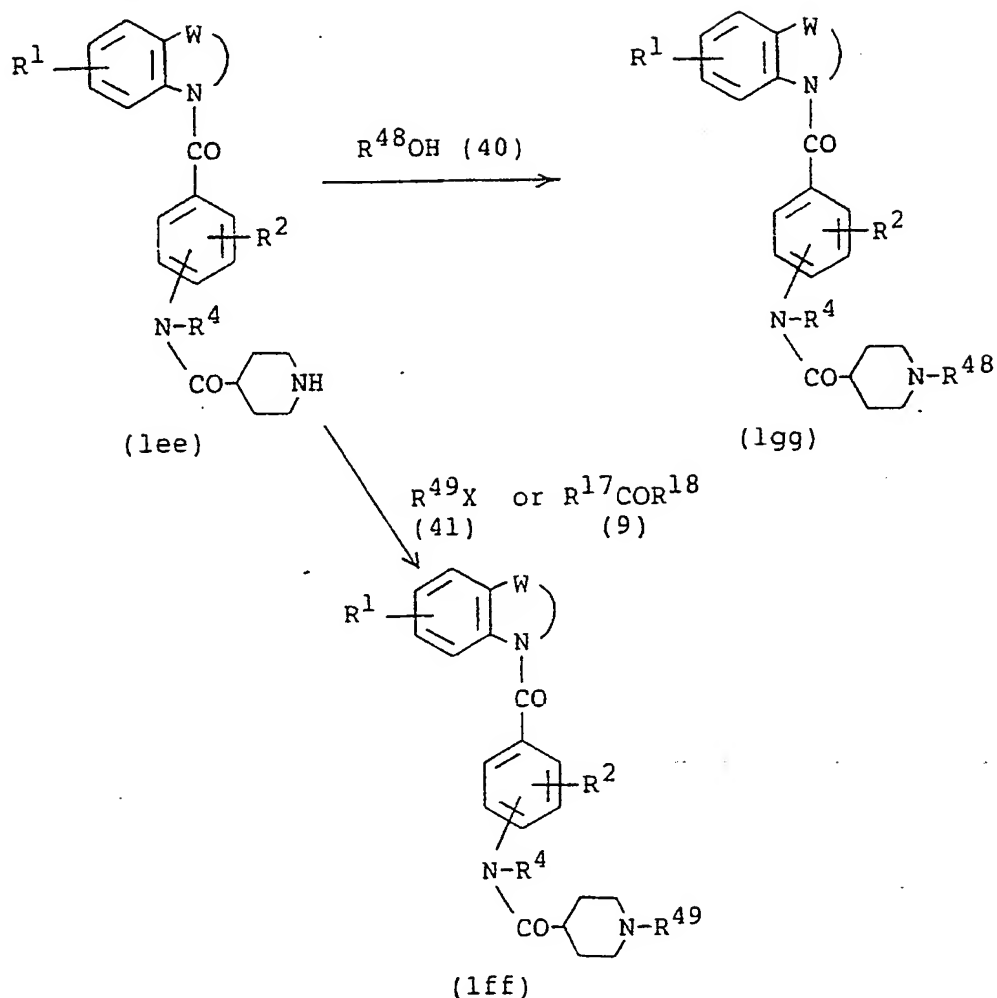
[Reaction Scheme-27]



wherein R^1 , R^2 , R^4 , W , and X are as defined above, and R^{47} is a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, or quinolylsulfonyl.

The reaction of the compound (2b) and the compound (39) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

[Reaction Scheme-28]



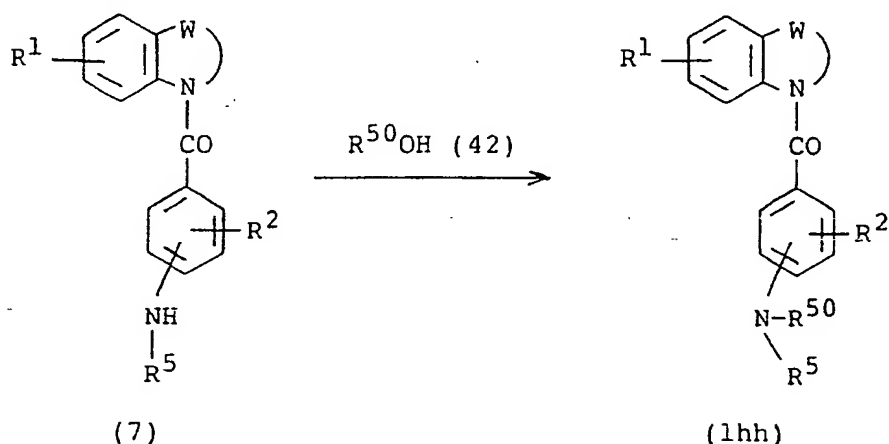
wherein R^1 , R^2 , R^4 , W , R^{17} , R^{18} , and X are as defined above, R^{48} is a phenyl-lower alkoxycarbonyl, a lower alkanoyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, and R^{49} is a lower alkyl or a carbamoyl-lower alkyl.

The reaction of the compound (lee) and the compound (40) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the

above Reaction Scheme-1.

The reaction of the compound (1ee) and the compound (41) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4, provided that in the reaction product (1ff) produced by the reaction of the compound (1ee) and the compound (9), the group R^{49} is a lower alkyl.

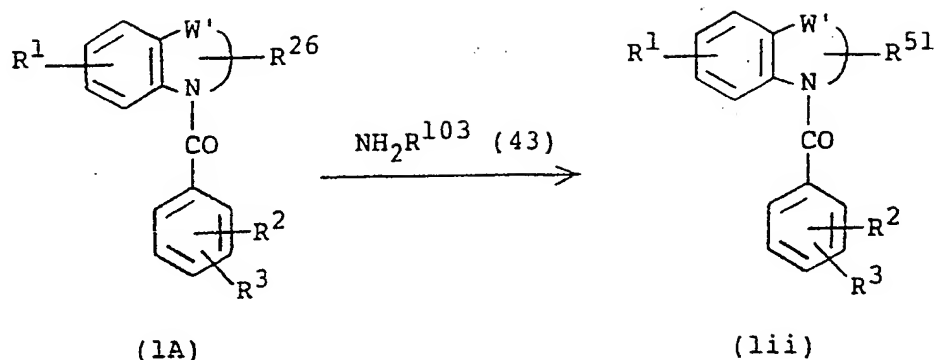
[Reaction Scheme-29]



wherein R^1 , R^2 , R^5 , and W are as defined above, and R^{50} is a benzoyl having optionally a halogen substituent on the phenyl ring.

The reaction of the compound (7) and the compound (42) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

[Reaction Scheme-30]

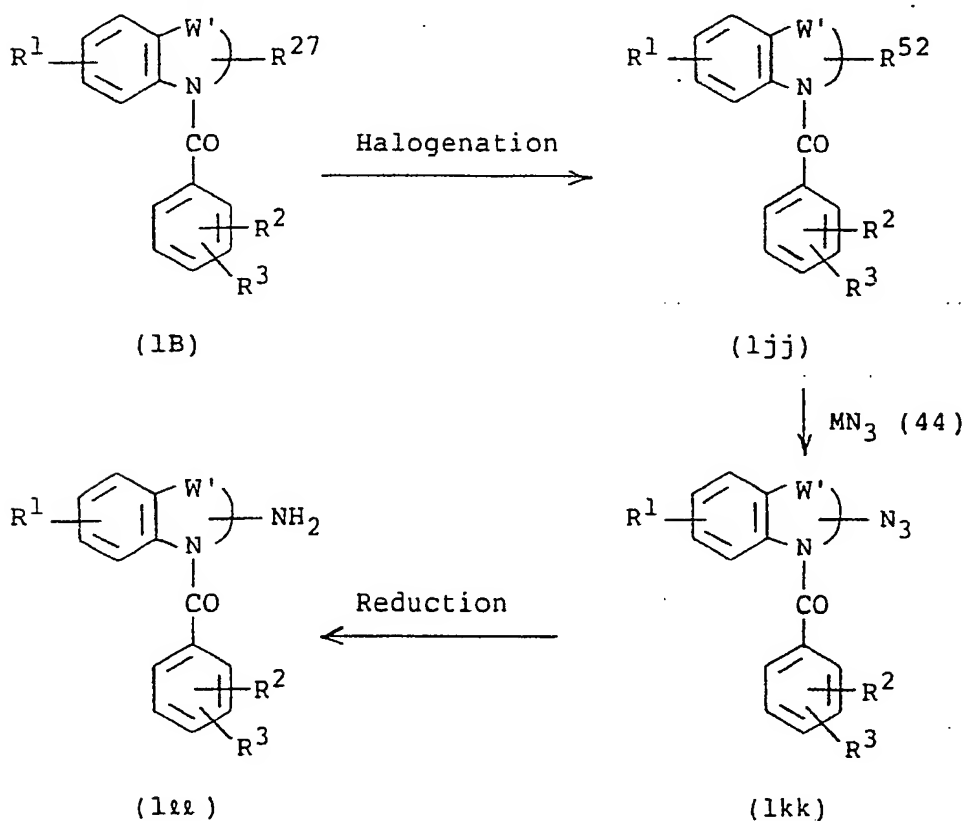


wherein R^1 , W' , R^{26} , R^2 , and R^3 are as defined above, R^{103} is hydroxy or sulfoxy, and R^{51} is hydroxyimino or sulfoxyimino.

The reaction of the compound (1A) and the compound (43) is usually carried out in an appropriate inert solvent in the presence or absence of a basic compound. The basic compound includes, for example, inorganic basic compounds such as sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, etc., and organic basic compounds such as piperidine, pyridine, triethylamine, 1,5-diazabicyclo[4.3.0]nonene-5 (DBN), 1,8-diazabicyclo[5.4.0]undecene-7 (DBU), 1,4-diazabicyclo[2.2.2]octane (DABCO), etc. The inert solvent includes, for example, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), ethers (e.g. dioxane, tetrahydrofuran, diethyl ether, ethylene glycol monomethyl ether, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), halogenated hydrocarbons (e.g. dichloromethane, dichloroethane, chloroform, carbon tetrachloride, etc.), pyridine,

dimethylformamide, dimethylsulfoxide, hexamethylphosphoric triamide, etc., or a mixture of these solvents. The compound (43) is usually used at least in equivalent amount, preferably 1 to 5 moles, to 1 mole of the compound (1A). The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from about 50°C to 150°C, for about 1 to 10 hours.

[Reaction Scheme-31]



wherein R^1 , W' , R^{27} , R^2 , M , and R^3 are as defined above, and R^{52} is a halogen atom.

The halogenation of the compound (1B) is usually carried out in an appropriate solvent or without solvent by

reacting the compound (1B) with a halogenating agent.

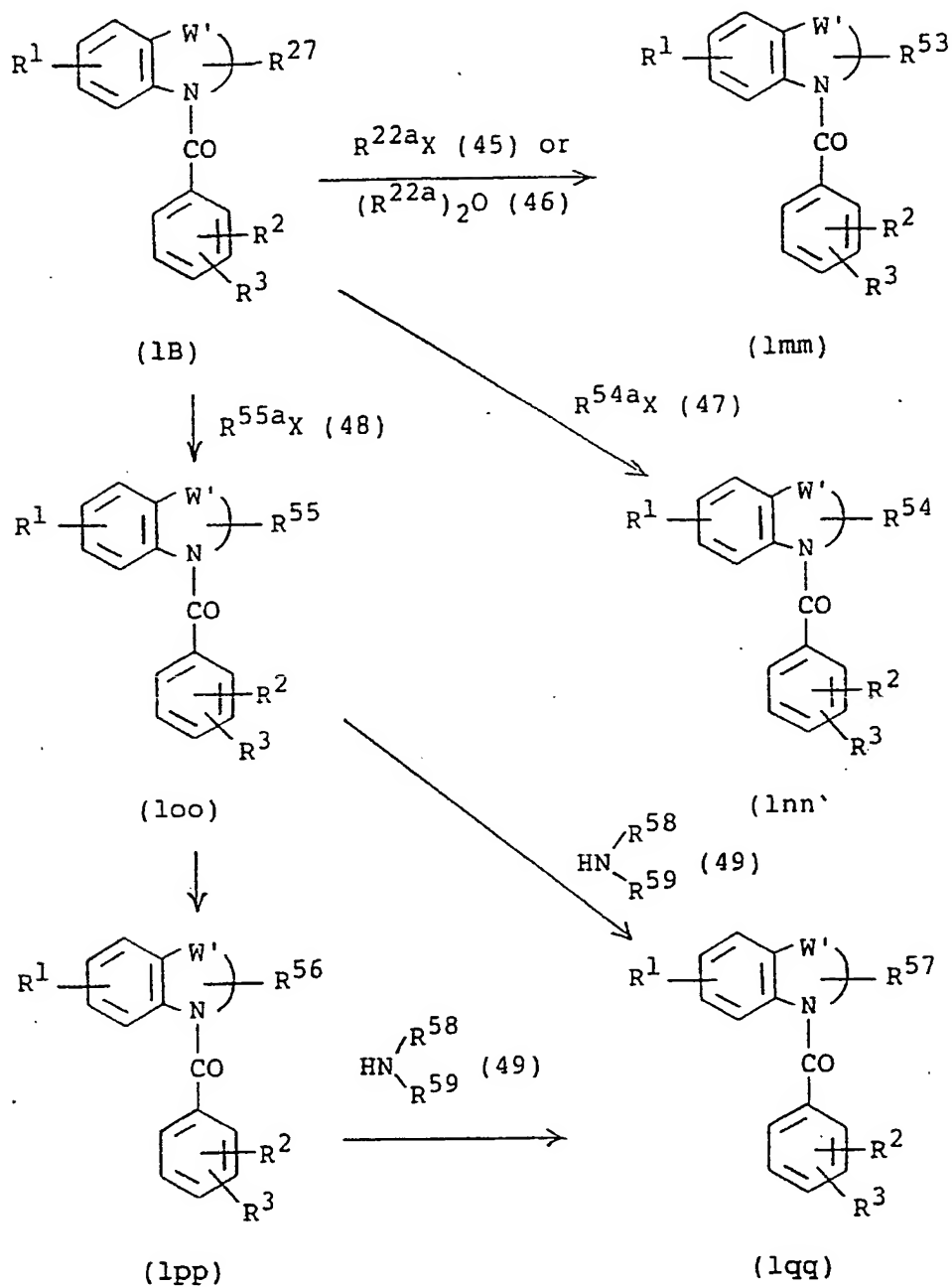
The halogenating agent includes mineral acids (e.g. hydrochloric acid, hydrobromic acid, etc.), N,N-diethyl-1,2,2-trichlorovinylamide, phosphorus pentachloride, phosphorus pentabromide, phosphorus oxychloride, thionyl chloride, methanesulfonyl chloride, or a combination of a phenyl-lower alkyl halide (e.g. p-toluenesulfonyl chloride, etc.) and a basic compound. The basic compound includes the same compounds as used in the reaction of the compound (1A) and the compound (43) in the above Reaction Scheme-30. The solvent includes, for example, ethers (e.g. dioxane, tetrahydrofuran, etc.), halogenated hydrocarbons (e.g. chloroform, methylene chloride, carbon tetrachloride, etc.), and the like. The amount of the halogenating agent may vary depending on the kinds of the halogenating agents, and in case of a combination of a phenyl-lower alkyl halide (e.g. p-toluenesulfonyl chloride, etc.) and a basic compound, it is used in an amount of at least 1 mole, preferably 1 to 2 moles, to 1 mole of the compound (1B), and in case of other halogenating agents, it is used at least in an equimolar amount, usually in a largely excess amount, to the compound (1B). The reaction is usually carried out at a temperature of from room temperature to about 150°C, preferably from room temperature to about 80°C, for about 1 to 80 hours.

The reaction of the compound (1jj) and the compound (44) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the

above Reaction Scheme-4.

The reducing reaction of the compound (1kk) can be carried out under the same conditions as in the reducing reaction using a reducing catalyst for converting the compound (1A) into the compound (1C) in the above Reaction Scheme-15.

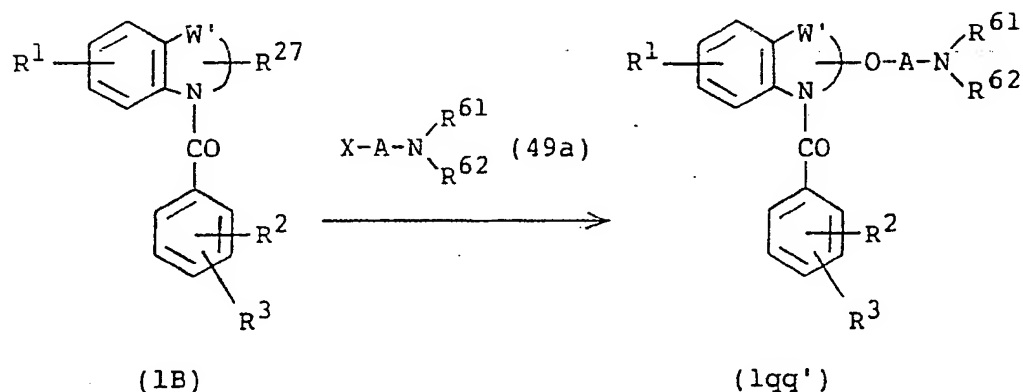
[Reaction Scheme-32A]



wherein R^1 , W' , R^2 , R^3 , R^{27} , X , and A are as defined above, R^{53} is a lower alkanoyloxy having optionally a halogen substituent, R^{54} is a lower alkoxy, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, or a group of the formula:

$\text{-O-A-CON} \begin{matrix} \text{R}^{82} \\ \text{R}^{83} \end{matrix}$ (A, R^{82} and R^{83} are as defined above), R^{55} is a lower alkoxy, R^{56} is a lower alkoxy, R^{57} is a carboxy-substituted lower alkoxy, R^{58} and R^{59} are the same or different and are each hydrogen atom or a lower alkyl, and R^{22a} is a lower alkanoyl having optionally a halogen substituent.

[Reaction Scheme-32B]



wherein R^1 , W' , R^2 , R^3 , X , R^{27} , and A are as defined above, and R^{61} and R^{62} are the same or different and are each hydrogen atom, a lower alkyl or a lower alkanoyl.

The reaction of the compound (1B) and the compound (45) or the compound (46) in the Reaction Scheme-32A can be carried out under the same conditions as in the reaction of the compound (1n) and the compound (18) in the above Reaction Scheme-9.

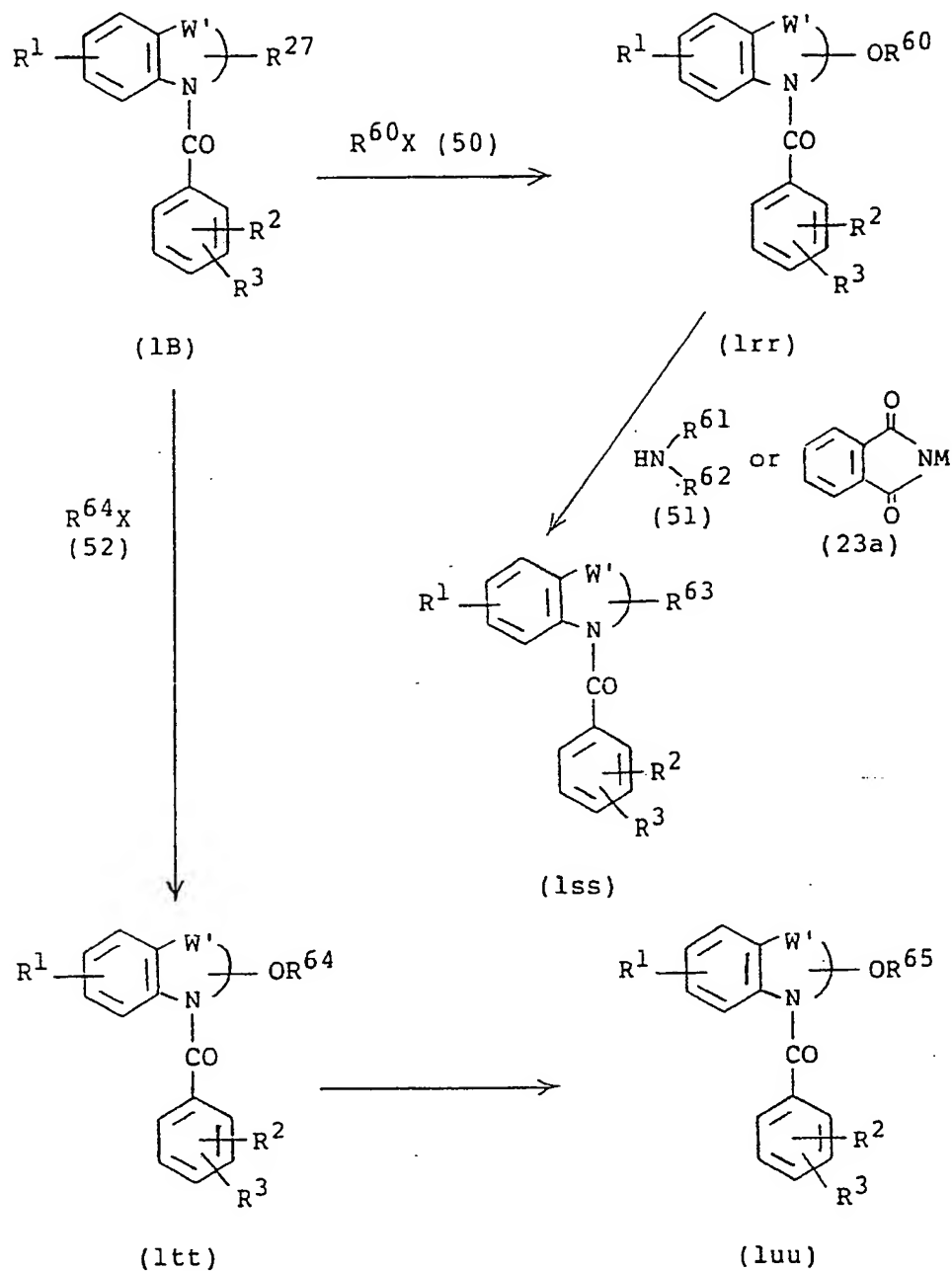
The reaction of the compound (1B) and the compound (47) and the reaction of the compound (1B) and the compound (48) can be carried out under the same conditions as in the reaction of the compound (1n) and the compound (18) in the above Reaction Scheme-9.

The reaction of converting the compound (100) into the compound (1pp) can be carried out under the same conditions as in the hydrolysis reaction of the compound (1j) in the above Reaction Scheme-7.

The reaction of the compound (100) and the compound (49) and the reaction of the compound (1pp) and the compound (49) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of the compound (1B) and the compound (49a) in the Reaction Scheme-32B can be carried out under the same conditions as in the reaction of the compound (1n) and the compound (18) in the above Reaction Scheme-9.

[Reaction Scheme-33]



wherein R^1 , W' , R^2 , R^3 , R^{27} , R^{61} , R^{62} , M , and X are as defined above, R^{60} is a halogen-substituted lower alkyl, R^{64} is a phthalimido-substituted lower alkyl, R^{63} is an amino-

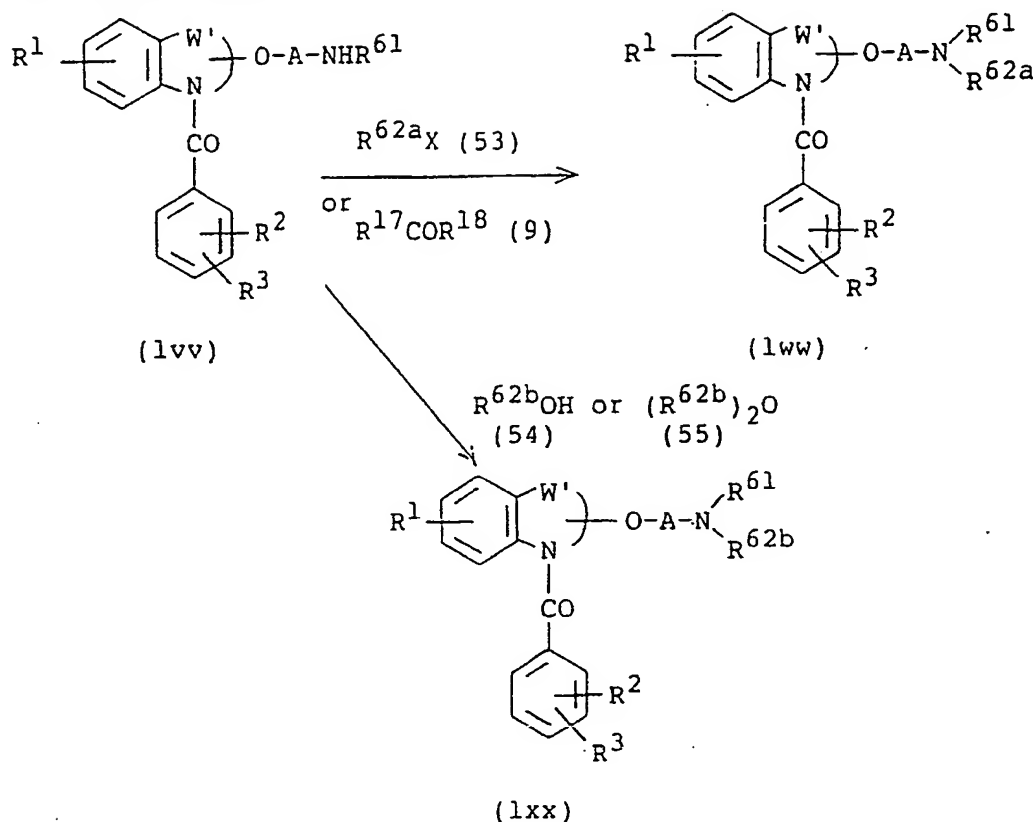
lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, or a phthalimido-substituted lower alkoxy, and R^{65} is an amino-substituted lower alkyl.

The reaction of the compound (1B) and the compound (50) and the reaction of the compound (1B) and the compound (52) can be carried out under the same conditions as in the reaction of the compound (1n) and the compound (18) in the above Reaction Scheme-9.

The reaction of the compound (1rr) and the compound (51) or the compound (23a) can be carried out under the same conditions as in the reaction of the compound (1g) and the compound (14) in the above Reaction Scheme-6.

The reaction of converting the compound (1tt) into the compound (1uu) can be carried out under the same conditions as in the reaction of converting the compound (1j) into the compound (1k) in the above Reaction Scheme-7.

[Reaction Scheme-34]



wherein R^1 , R^2 , R^3 , R^{61} , W' , A , R^{17} , R^{18} , and X are as defined above, R^{62a} is a lower alkyl, and R^{62b} is a lower alkanoyl.

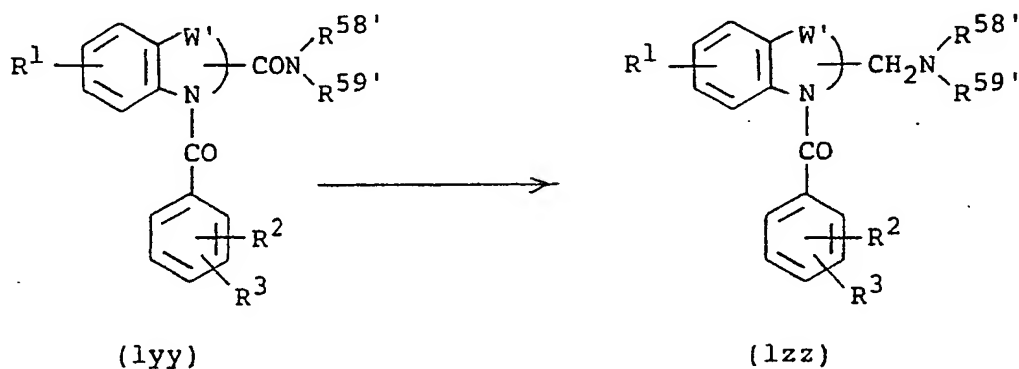
The reaction of the compound (lvv) and the compound (53) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4.

The reaction of the compound (lvv) and the compound (54) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the

above Reaction Scheme-1.

The reaction of the compound (lvv) and the compound (55) can be carried out under the same conditions as in the reaction of the compound (lp) and the compound of the formula: $(R^{7b})_2O$ in the above Reaction Scheme-10.

[Reaction Scheme-35]



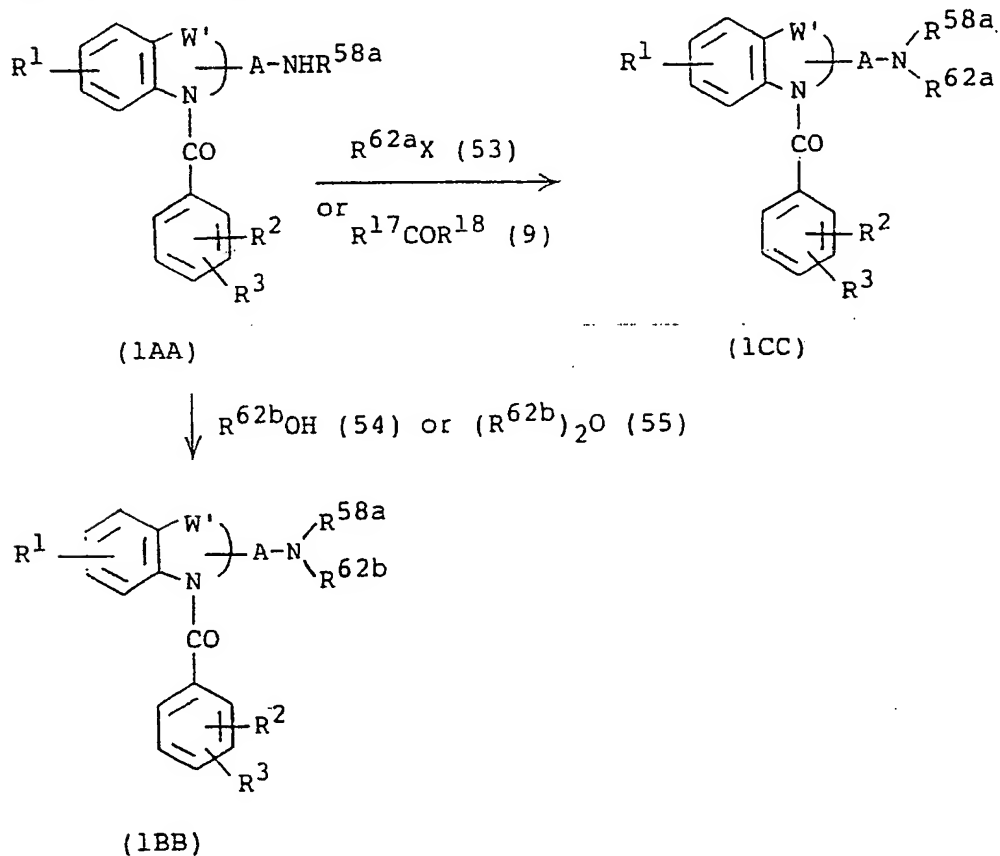
wherein R^1 , R^2 , R^3 , and W' are as defined above, $R^{58'}$ and $R^{59'}$ are the same or different and are each hydrogen atom, a lower alkyl, or a lower alkanoyl.

The reaction of converting the compound (lyy) into the compound (lzz) is usually carried out by reducing the compound (lyy).

The reducing reaction is preferably carried out by using a hydrogenating reducing agent. The hydrogenating reducing agent includes, for example, lithium aluminum hydride, sodium boro hydride, diborane, etc. The reducing agent is usually used in an amount of at least one mole, preferably 1 to 15 moles, to 1 mole of the starting compound. The reducing reaction is usually carried out in an appropriate solvent, such as water, lower alcohols (e.g.

methanol, ethanol, isopropanol, etc.), ethers (e.g. tetrahydrofuran, diethyl ether, diisopropyl ether, diglyme, etc.), or a mixture of these solvents, at a temperature of about -60°C to about 150°C , preferably about -30°C to 100°C , for about 10 minutes to about 5 hours. When lithium aluminum hydride or diborane is used as the reducing agent, it is preferable to use an anhydrous solvent such as diethyl ether, tetrahydrofuran, diglyme, etc.

[Reaction Scheme-36]



wherein R^1 , W' , R^2 , R^3 , R^{62a} , R^{62b} , X , R^{17} , R^{18} , and A are as defined above, R^{58a} is hydrogen atom, a lower alkyl or a lower alkanoyl.

The reaction of the compound (1AA) and the compound (53) or the compound (9) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) or the compound (9) in the above Reaction Scheme-4.

The reaction of the compound (1AA) and the compound (54) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of the compound (1AA) and the compound (55) can be carried out under the same conditions as in the reaction of the compound (1p) and the compound of the formula: $(R^{7b})_2O$ in the above Reaction Scheme-10.

The compound (1BB) wherein R^{62b} is formyl can also be prepared by reacting the compound (1AA) with a formate of the formula: $HCOOR^{82}$ under the same conditions as in the reaction of the compound (1K) and the compound of the formula: $HCOOR^{82}$ as described hereinbefore.

The compounds of the formula (1) wherein W is sulfur atom or sulfinyl, or R^{82} and R^{83} bind together with the nitrogen atom to which they bond to form thiomorpholino or 1-oxo-thiomorpholino can be converted into the corresponding compounds of the formula (1) wherein W is sulfinyl or sulfonyl, or R^{82} and R^{83} bind together with the nitrogen atom to which they bond to form 1-oxo-thiomorpholino or 1,1-dioxo-thiomorpholino, respectively, by oxidation thereof.

The oxidation reaction is carried out in an

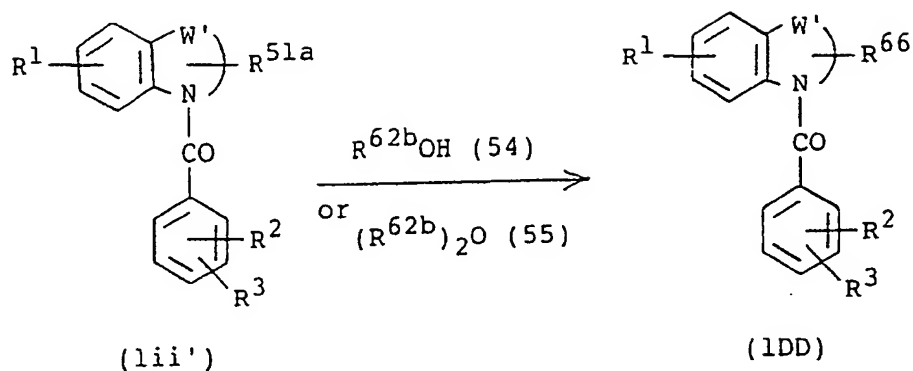
appropriate solvent in the presence of an oxidizing agent. The solvent includes, for example, water, organic acids (e.g. formic acid, acetic acid, trifluoroacetic acid, etc.), alcohols (e.g. methanol, ethanol, etc.), halogenated hydrocarbons (e.g. chloroform, dichloromethane, etc.), or a mixture of these solvents. The oxidizing agent includes, for example, peracids (e.g. performic acid, peracetic acid, trifluoro-peracetic acid, perbenzoic acid, m-chloro-perbenzoic acid, o-carboxy-perbenzoic acid, etc.), hydrogen peroxide, sodium metaperiodate, dichromic acid, dichromates (e.g. sodium dichromate, potassium dichromate, etc.), permanganic acid, permanganates (e.g. potassium permanganate, sodium permanganate, etc.), lead salts (e.g. lead tetraacetate, etc.), and the like. The oxidizing agent is usually used in an amount of at least 1 mole, preferably 1 to 2 moles, to 1 mole of the starting compound. Besides, in cases of the oxidation of converting the sulfur atom into sulfonyl group, the oxidizing agent is usually used at least 2 moles, preferably 2 to 4 moles, to 1 mole of the starting compound. The above reaction is usually carried out at a temperature of about -10°C to about 40°C , preferably from about -10°C to room temperature, for about 1 to 100 hours.

The compound (1) wherein R^{16} or R^2 is a lower alkoxy can be converted into the correspond compound (1) wherein R^{16} or R^2 is hydroxy by heating the compound in a mixture of an acid (e.g. hydrobromic acid, hydrochloric acid, etc.) and a solvent (e.g. water, methanol, ethanol,

isopropyl alcohol, etc.) at 30 to 150°C, preferably at 50 to 120°C.

Besides, the compound (1) wherein R^{16} or R^2 is hydroxy can also be prepared by hydrolysis of the above compound (1) wherein R^{16} or R^2 is a lower alkoxy. The hydrolysis can be carried out in an appropriate solvent in the presence of an acid. The solvent includes, for example, water, lower alcohols (e.g. methanol, ethanol, isopropyl alcohol, etc.), ethers (e.g. dioxane, tetrahydrofuran, etc.), halogenated hydrocarbons (e.g. dichloromethane, chloroform, carbon tetrachloride, etc.), polar solvents (e.g. acetonitrile, etc.), or a mixture of these solvents. The acid includes, for example, mineral acids (e.g. hydrochloric acid, hydrobromic acid, etc.), Lewis acids (e.g. boron trifluoride, aluminum chloride, boron tribromide, etc.), iodides (e.g. sodium iodide, potassium iodide, etc.), or a mixture of the above Lewis acid and iodide. The reaction is usually carried out at a temperature of from room temperature to about 150°C, preferably from room temperature to about 100°C, for about 0.5 to 30 hours.

[Reaction Scheme-37]

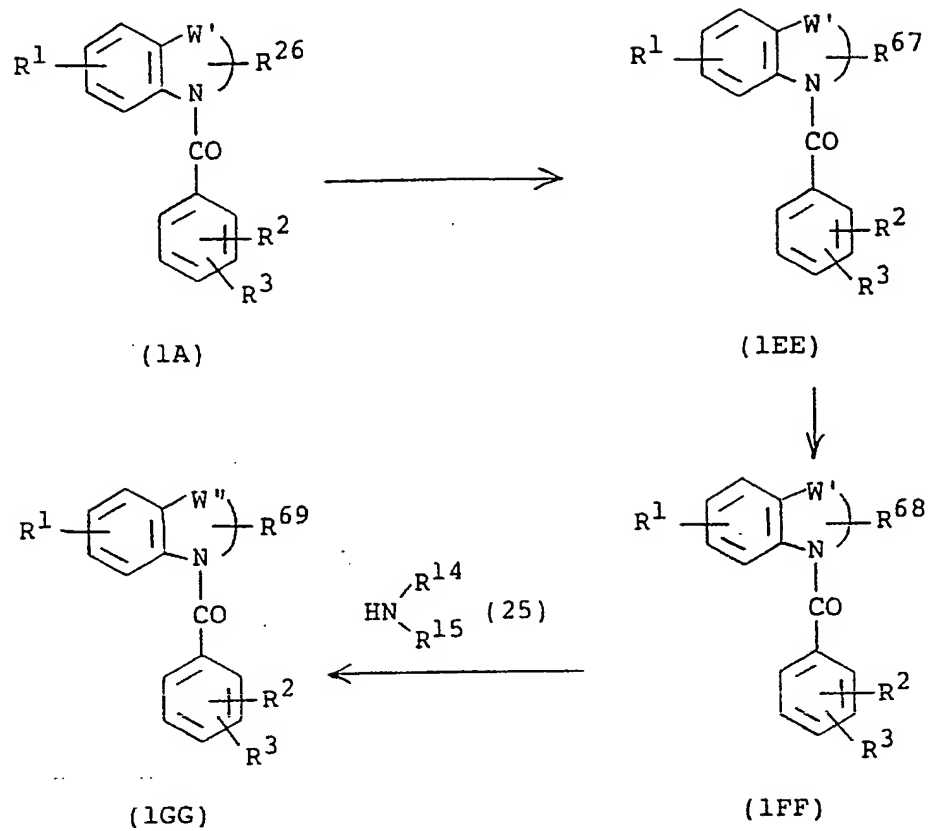


wherein R¹, R², R³, R^{62b}, and W' are as defined above, R^{51a} is hydroxyimino, and R⁶⁶ is a lower alkanoyloxyimino.

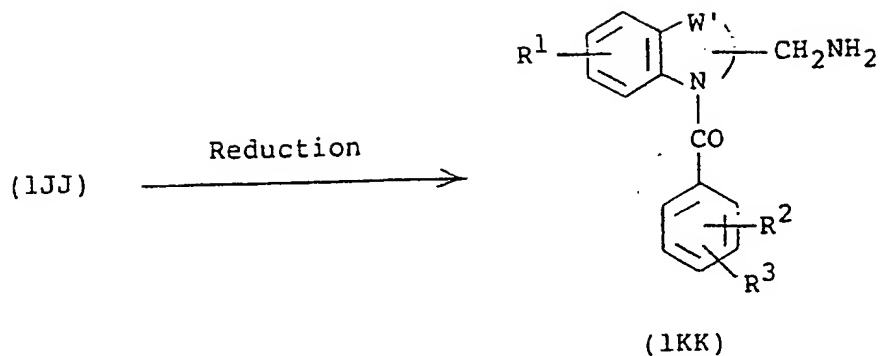
The reaction of the compound (lii') and the compound (54) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of the compound (lii') and the compound (55) can be carried out under the same conditions as in the reaction of the compound (1p) and the compound of the formula: (R^{7b})₂O in the above Reaction Scheme-10.

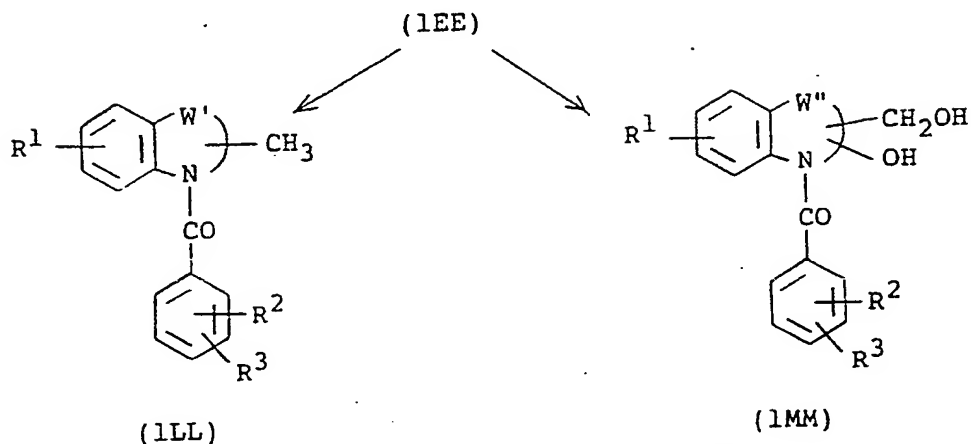
[Reaction Scheme-38A]



[Reaction Scheme-38D]



[Reaction Scheme-38E]



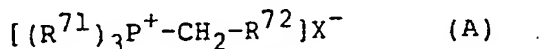
wherein R^1 , R^2 , R^3 , W' , R^{26} , R^{14} , R^{15} , R^{62b} , X and M are as defined above, R^{67} is methyldene, R^{68} is a group of the

formula: $\begin{array}{c} \diagup \\ O \end{array}$, and R^{69} is a group of the formula: $\begin{array}{c} CH_2OH \\ \diagdown \\ NR^{14}R^{15} \end{array}$

(R^{14} and R^{15} are as defined above), or $\begin{array}{c} CH_2R^{7D} \\ \diagdown \\ OH \end{array}$ (R^{7D} is an

amino having optionally a substituent selected from a lower alkyl and a lower alkanoyl, R^{70} is a lower alkylsulfonyl, and W'' is the same as the above W , provided that the number of the substituent in the groups $-(CH_2)_p-$ and $-CH=CH-(CH_2)_q-$ is 0 or 1.

The reaction of converting the compound (1A) into the compound (1EE) is carried out in an appropriate solvent in the presence of a Wittig reagent and a basic compound. The Wittig reagent includes, for example, a phosphoric compound of the formula:



wherein R^{71} is phenyl, R^{72} is hydrogen atom or a lower alkyl, and X is a halogen atom. The basic compound includes inorganic bases (e.g. metallic sodium, metallic potassium, sodium hydride, sodium amide, sodium hydroxide, potassium hydroxide, sodium carbonate, potassium carbonate, sodium hydrogen carbonate, etc.), metal alcoholates (e.g. sodium methylate, sodium ethylate, potassium t-butoxide, etc.), alkyl or aryl lithiums or lithium amides (e.g. methyl lithium, n-butyl lithium, phenyl lithium, lithium diisopropylamide, etc.), organic bases (e.g. pyridine, piperidine, quinoline, triethylamine, N,N-dimethylaniline, etc.). The solvent includes any solvent which does not affect on the reaction, for example, ethers (e.g. diethyl ether, dioxane, tetrahydrofuran, monoglyme, diglyme, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), aliphatic hydrocarbons (e.g. n-hexane, heptane, cyclohexane, etc.), amines (e.g. pyridine, N,N-dimethylaniline, etc.), aprotic polar solvents (e.g. N,N-dimethylformamide, dimethylsulfoxide, hexamethylphosphoric triamide, etc.), alcohols (e.g. methanol, ethanol, isopropanol, etc.), and the like. The reaction is usually carried out at a temperature of about -80°C to about 150°C , preferably about -80°C to about 120°C ,

for about 0.5 to 15 hours.

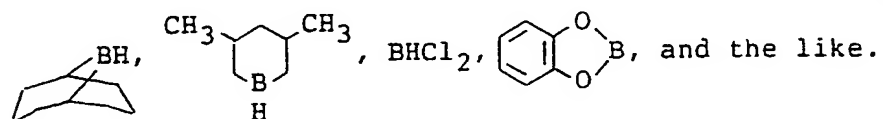
The reaction of converting the compound (1EE) into the compound (1LL) can be carried out under the same conditions as in the catalytically hydrogenation reaction for converting the compound (1A) into the compound (1C) in the above Reaction Scheme-15.

The reaction of converting the compound (1EE) into the compound (1FF) is carried out under the same conditions as in the reaction of converting the compound (1) wherein W is sulfur atom or sulfinyl into the corresponding compound (1) wherein W is sulfinyl or sulfonyl respectively as described herebefore.

The reaction of the compound (1FF) and the compound (25) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

The reaction of converting the compound (1EE) into the compound (1E) can be carried out by firstly subjecting it to hydroboration reaction and then to oxidation.

The hydroboration reaction is carried out in a solvent such as ethers (e.g. diethyl ether, tetrahydrofuran, dioxane, etc.) in the presence of a hydroborating agent at a temperature of from about 0°C to about 50°C, preferably about 0°C to room temperature, for about 1 to 10 hours. The hydroborating agent includes boron hydride compounds, for example, BH_3 .tetrahydrofuran, $\text{BH}_3 \cdot \text{S}(\text{CH}_3)_2$, BH_2Cl , $(\text{CH}_3)_2\text{CHC}(\text{CH}_3)_2\text{BH}_2$, $(\text{CH}_3)_2\text{CHCH}(\text{CH}_3)\text{BH}$, $(\text{Cyclohexyl})_2\text{-BH}$, $(\text{Bicyclo[2.2.1]hept-2-yl})_2\text{BH}$,



The subsequent oxidation is carried out in water in the presence of an oxidizing agent. The oxidizing agent includes, for example, alkaline hydrogen peroxides (e.g. hydrogen peroxide - sodium hydroxide, etc.), and air oxidation is also used. The reaction is usually carried out at a temperature of from room temperature to about 150°C, preferably from room temperature to about 100°C, for 0.5 to 7 hours.

The hydroborating agent and the oxidizing agent are each used in an amount of at least 1 mole, preferably 1 to 2 mole, to 1 mole of the compound (1EE).

The reaction of the compound (1E) and the compound (54) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The reaction of the compound (1E) and the compound (55) can be carried out under the same conditions as in the reaction of the compound (1p) and the compound of the formula: $(R^{7b})_2O$ in the above Reaction Scheme-10.

The reaction of the compound (1E) and the compound (56) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

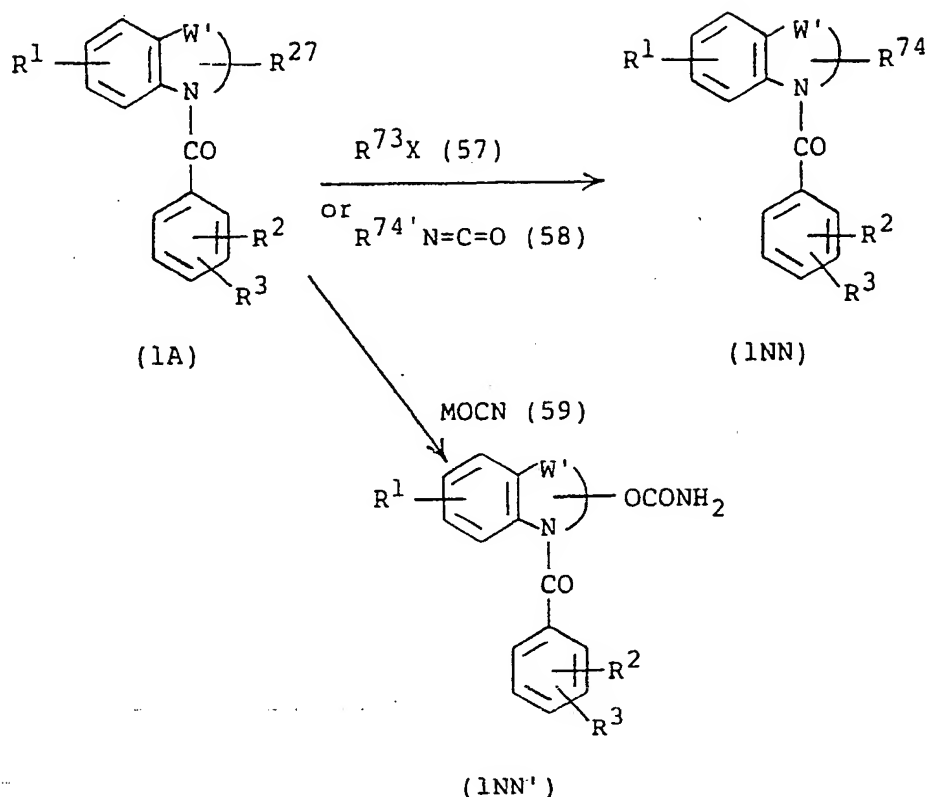
The reaction of the compound (1HH) and the compound (44) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

The reducing reaction of the compound (1JJ) can be carried out under the same conditions as in the catalytic hydrogenation reaction for converting the compound (1A) into the compound (1C) in the above Reaction Scheme-15.

The reaction of converting the compound (1EE) into the compound (1MM) can be carried out by reacting with an oxidizing agent in an appropriate solvent in the presence of a co-oxidizing agent.

The solvent used for the reaction with an oxidizing agent includes, for example, pyridine, ethers (e.g. dioxane, tetrahydrofuran, diethyl ether, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), halogenated hydrocarbons (e.g. dichloromethane, dichloroethane, chloroform, carbon tetrachloride, etc.), esters (e.g. ethyl acetate, etc.), water, alcohols (e.g. methanol, ethanol, isopropanol, t-butanole, etc.), or a mixture of these solvents. The co-oxidizing agent includes, for example, organic amine N-oxides (e.g. pyridine N-oxide, N-ethyldiisopropylamine N-oxide, N-methylmorpholine N-oxide, trimethylamine N-oxide, triethylamine N-oxide, etc.). The oxidizing agent includes, for example, osmium tetroxide, and the like. The oxidizing agent is usually used in an amount of at least 1 mole, preferably 1 to 5 moles, to 1 mole of the starting compound. The reaction is usually carried out at a temperature of from -20°C to 150°C, preferably from room temperature to 100°C, for about 1 to 10 hours.

[Reaction Scheme-39]



wherein R^1 , R^2 , R^3 , R^{27} , W' , M , and X are as defined above, R^{73} is an aminocarbonyl having optionally a lower alkyl substituent, R^{74} is an aminocarbonyloxy having optionally a lower alkyl substituent, $R^{74'}$ is a lower alkyl.

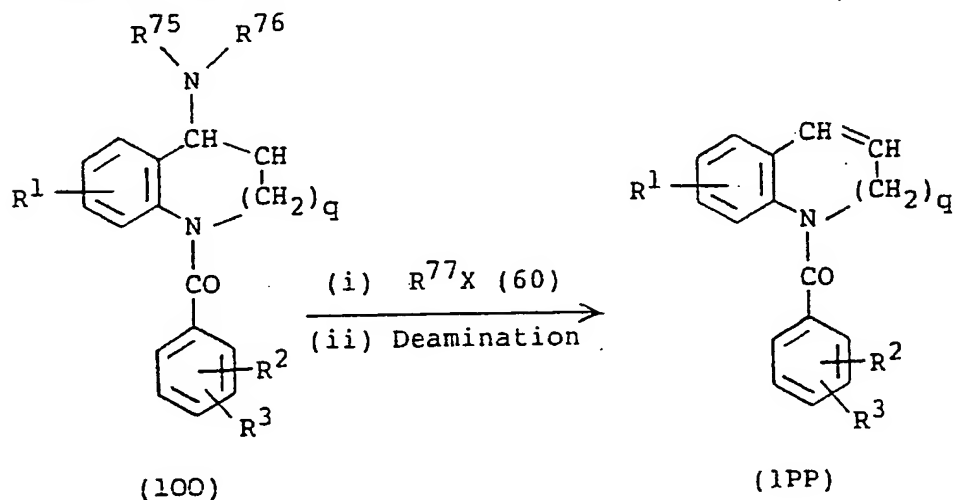
The reaction of the compound (1A) and the compound (57) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

The reaction of the compound (1A) and the compound (59) is carried out in an appropriate solvent in the presence of an acid. The solvent includes the same solvent

as used in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. The acid includes, for example, mineral acids (e.g. hydrochloride acid, sulfuric acid, etc.), sulfonic acids (e.g. methanesulfonic acid, p-toluenesulfonic acid, etc.), alkanolic acids (e.g. trifluoroacetic acid, etc.), and the like. The compound (59) is used in an amount of at least 1 mole, preferably 1 to 5 moles, to 1 mole of the compound (1A). The reaction is usually carried out at a temperature of from room temperature to about 150°C, preferably from room temperature to about 100°C, for about 1 to 7 hours.

The reaction of the compound (1A) and the compound (58) can be carried out under the same conditions as in the reaction of the compound (2b) and the compound (38) in the above Reaction Scheme-26.

[Reaction Scheme-40]



wherein R^1 , R^2 , R^3 , X , and q are as defined above, and R^{75} , R^{76} and R^{77} are each a lower alkyl, and the carbon atom in the formula: $\text{-(CH}_2\text{)}_q\text{-}$ may be substituted by oxygen atom,

sulfur atom, sulfinyl, sulfonyl, or a group of the formula:

$$\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$$
 (R^{13} is as defined above), and further the group: $-(CH_2)_q-$ may optionally have 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxy-carbonyl, carboxyl, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkylsulfonyloxy-lower alkyl, an azido-lower alkyl, a group of the formula: —O— , an aminocarbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxy-carbonyl-substituted lower alkoxy, a carboxy-substituted lower alkoxy, an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxyimino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula: $R^{81}-N-CH_2COO-$ (R^{81} is hydrogen atom or a lower alkyl), hydrazino, pyrrolyl, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, a group of the formula: $-O-A-CO-N \begin{array}{l} R^{82} \\ R^{83} \end{array}$ (A is as defined above, and R^{82} and R^{83} are the same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R^{82} and R^{83} may bind together with nitrogen atom to which they

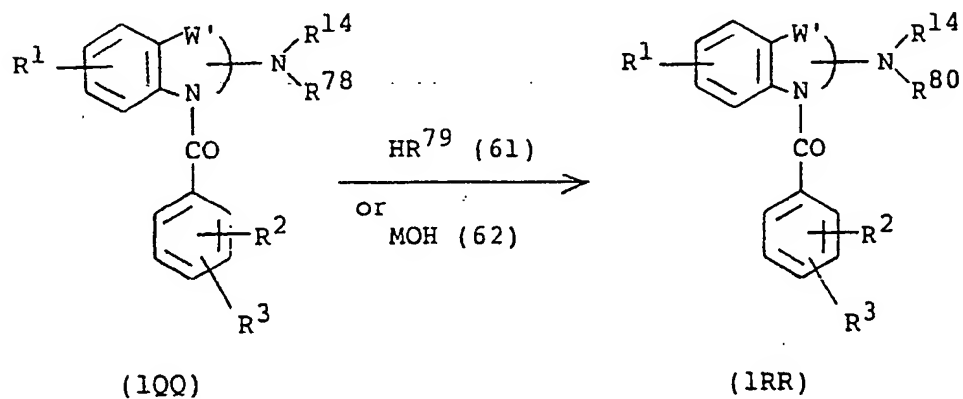
bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl), and a group of the formula: $-(CO)_n-N \begin{matrix} R^{14} \\ R^{15} \end{matrix}$ (n is as defined above, and R^{14} and R^{15} are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, benzoyl, a lower alkoxy-carbonyl, anilino-carbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted-lower alkyl, a lower alkoxy-carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyl-oxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyll having optionally a phenyl-lower alkyl substituent on the piperidinyll ring, a halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxy-carbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxy-carbonyl, or R^{14} and R^{15} may bind together to the nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom, which

heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl and a lower alkanoyl.

The reaction of the compound (100) and the compound (60) is carried out in an appropriate solvent in an autoclave. The solvent includes any solvent as used in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from room temperature to about 150°C, for about 1 to 7 hours.

The subsequent deamination reaction is carried out in an appropriate solvent in the presence of a basic compound. The solvent includes the same solvent as used in the above reaction of the compound (100) and the compound (60). The basic compound includes any basic compound as used in the reaction of converting the compound (1A) into the compound (1EE) in the above Reaction Scheme-38. The reaction is usually carried out at a temperature of from room temperature to about 150°C, preferably from room temperature to about 100°C, for about 1 to 10 hours.

[Reaction Scheme-41]



wherein R^1 , R^2 , R^3 , R^{14} , M, and W' are as defined above, R^{78} is

an oxiranyl-substituted lower alkyl, R^{79} is a lower alkoxy, or an amino having optionally a lower alkyl substituent, and R^{80} is a lower alkyl having 2 substituents selected from hydroxy, a lower alkoxy, and an amino having optionally a lower alkyl substituent.

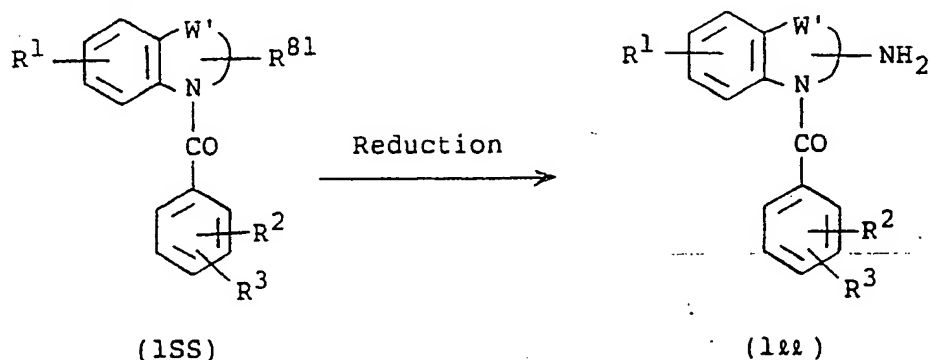
The reaction of the compound (1QQ) and the compound (61) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

The reaction of the compound (1QQ) and the compound (62) can be carried out by firstly reacting them in trifluoroacetic acid at a temperature of about 0°C to about 100°C , preferably about 0°C to about 50°C , for about 1 to 7 hours, followed by hydrolysis of the resultant.

The hydrolysis is carried out in an appropriate solvent or without solvent in the presence of an acid or a basic compound. The solvent includes, for example, water, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), ketones (e.g. acetone, methyl ethyl ketone, etc.), ethers (e.g. dioxane, tetrahydrofuran, ethylene glycol dimethyl ether, etc.), fatty acids (e.g. acetic acid, formic acid, etc.), or a mixture of these solvents. The acid includes, for example, mineral acids (e.g. hydrochloric acid, sulfuric acid, hydrobromic acid, etc.), organic acids (e.g. formic acid, acetic acid, aromatic sulfonic acid, etc.), and the like. The basic compound includes, for example, metal carbonates (e.g. sodium carbonate, potassium carbonate, etc.), metal hydroxides (e.g. sodium hydroxide, potassium hydroxide, calcium hydroxide,

etc.). The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from room temperature to about 150°C, for about 0.5 to 25 hours.

[Reaction Scheme-42]



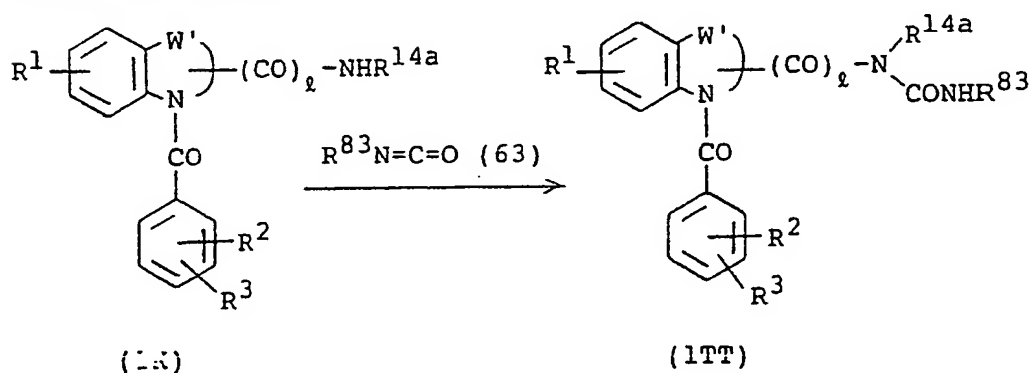
wherein R¹, R², R³, and W' are as defined above, and R⁸¹ is hydroxyimino or a lower alkanoyloxyimino.

The reaction of converting the compound (1SS) into the compound (122) is carried out by catalytically hydrogenating the compound (1SS) in an appropriate solvent in the presence of a catalyst. The solvent includes, for example, water, acetic acid, alcohols (e.g. methanol, ethanol, isopropanol, etc.), hydrocarbons (e.g. hexane, cyclohexane, etc.), ethers (e.g. diethylene glycol dimethyl ether, dioxane, tetrahydrofuran, diethyl ether, etc.), esters (e.g. ethyl acetate, methyl acetate, etc.), aprotic polar solvents (e.g. dimethylformamide, etc.), or a mixture of these solvents. The catalyst includes, for example, palladium, palladium black, palladium-carbon, platinum, platinum oxide, copper chromate, Raney nickel, and the like. The catalyst is usually used in an amount of 0.02 to 1 part by weight to 1 part by weight of the compound (1SS). The reaction is usually carried out at a temperature of from

about -20°C to about 100°C, preferably about 0°C to about 70°C, under a hydrogen atmospheric pressure of 1 to 10 atm. for about 0.5 to 20 hours.

Alternatively, the reducing reaction can also be carried out by using a hydrogenating reducing agent. The hydrogenating reducing agent includes, for example, lithium aluminum hydride, sodium borohydride, diborane, etc. The reducing agent is usually used in an amount of at least one mole, preferably 1 to 10 moles, to 1 mole of the compound (1SS). The reaction is usually carried out in an appropriate solvent, such as water, lower alcohols (e.g. methanol, ethanol, isopropanol, etc.), ethers (e.g. tetrahydrofuran, diethyl ether, diglyme, etc.), acetic acid, and the like, at a temperature of about 0°C to about 200°C, preferably about 0°C to 170°C, for about 10 minutes to about 10 hours. When lithium aluminum hydride or diborane is used as the reducing agent, it is preferable to use an anhydrous solvent such as diethyl ether, tetrahydrofuran, diglyme, etc.

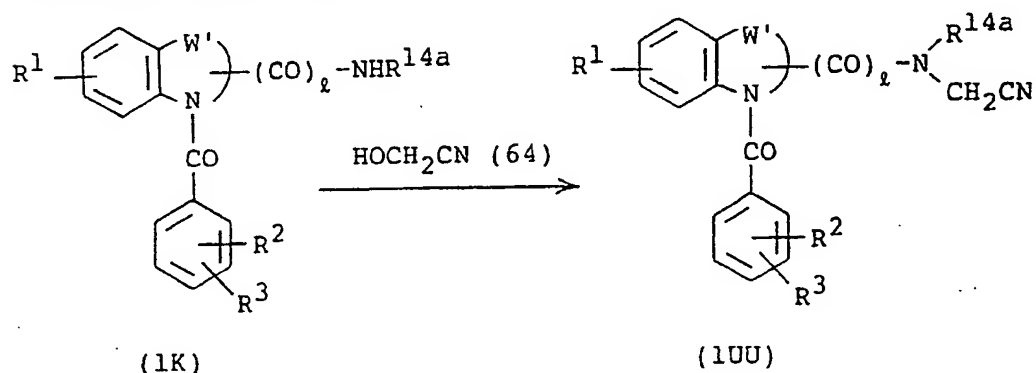
[Reaction Scheme-43]



wherein R^1 , R^2 , R^3 , W' , l , R^{14a} are as defined above, and R^{83} is phenyl or a lower alkyl.

The reaction of the compound (1K) and the compound (63) can be carried out under the same conditions as in the reaction of the compound (2b) and the compound (38) in the above Reaction Scheme-26.

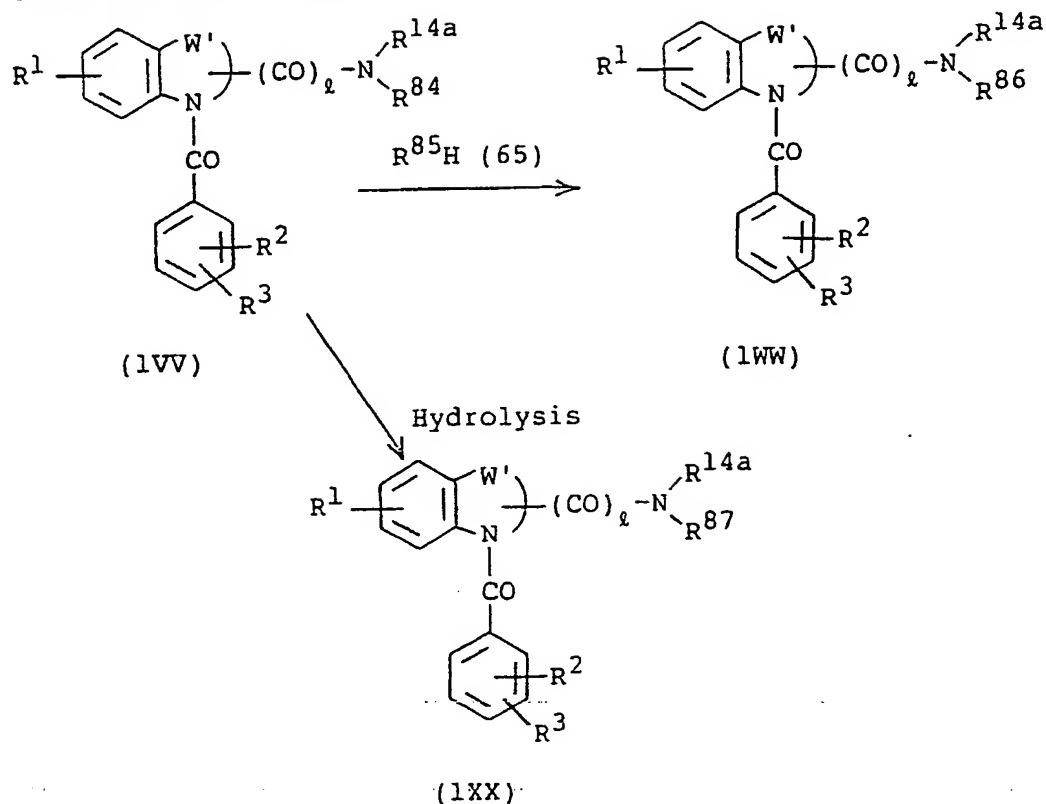
[Reaction Scheme-44]



wherein R^1 , R^2 , R^3 , W' , l , R^{14a} are as defined above.

The reaction of the compound (1K) and the glyconitrile (64) can be carried out in an appropriate solvent. The solvent includes the same solvent as used in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4. The reaction is usually carried out at a temperature of from about 0°C to about 150°C , preferably about 0°C to about 100°C , for about 1 to 10 hours. The glyconitrile (64) is used in an amount of at least 1 mole, preferably 1 to 2 moles, to 1 mole of the compound (1K).

[Reaction Scheme-45]

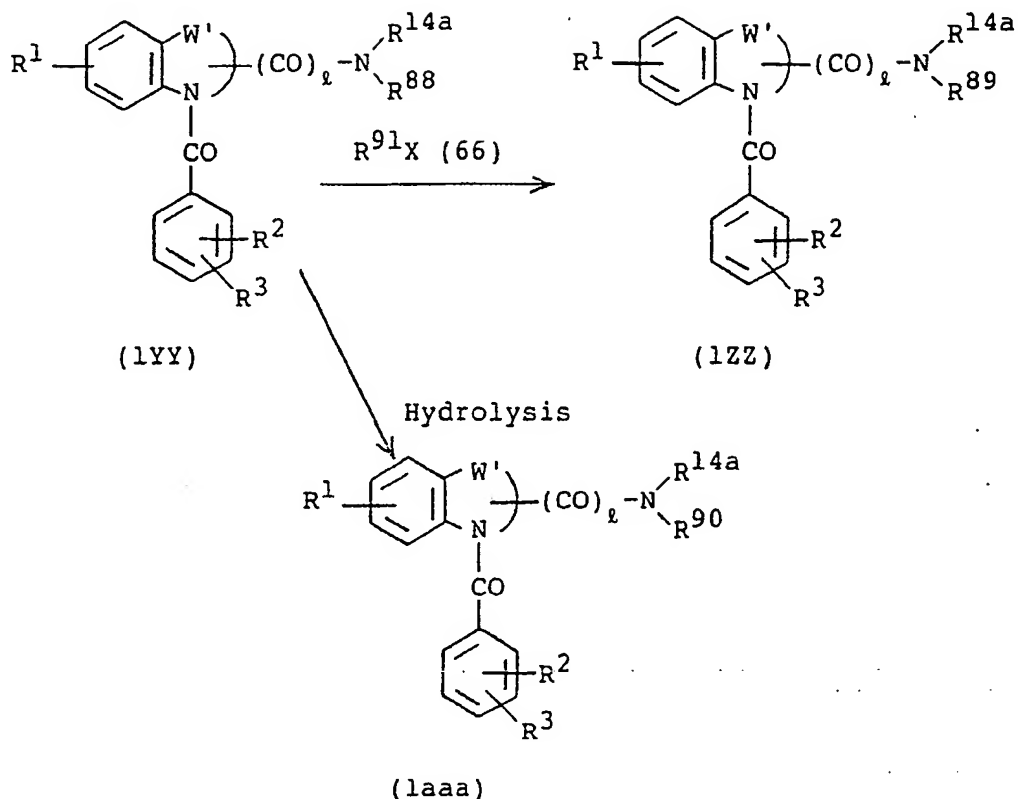


wherein R^1 , R^2 , R^3 , W' , ϵ , R^{14a} are as defined above, R^{84} is a lower alkoxy-carbonyl-substituted lower alkyl, R^{85} is an amino having optionally a lower alkyl substituent, R^{86} is an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, and R^{87} is a carboxy-substituted lower alkyl.

The reaction of the compound (1VV) and the compound (65) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

The hydrolysis reaction of the compound (1WW) can be carried out under the same conditions as in the hydrolysis reaction of the compound (1QQ) and the compound (62) in the above Reaction Scheme-41.

[Reaction Scheme-46]

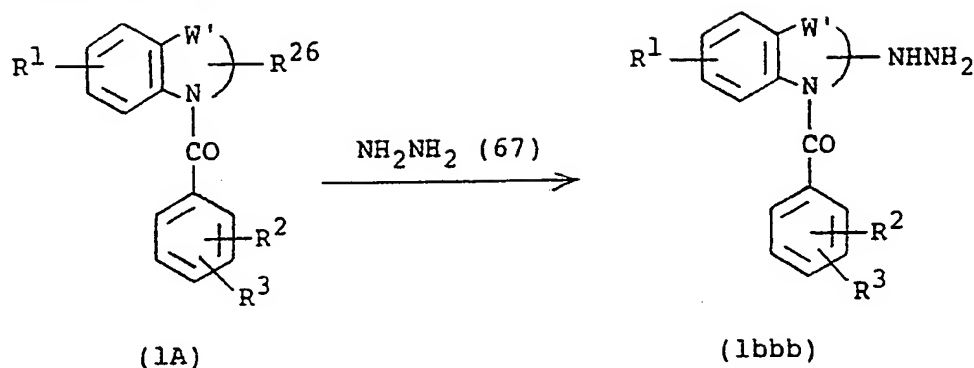


wherein R^1 , R^2 , R^3 , W' , l , X , and R^{14a} are as defined above, R^{88} is a tetrahydropyranyloxy-substituted lower alkyl, R^{89} is a lower alkanoyloxy-substituted lower alkyl, R^{90} is a hydroxy-substituted lower alkyl, and R^{91} is a lower alkanoyl.

The reaction of the compound (1YY) and the compound (66) can be carried out in a solvent such as acetic acid at a temperature of about 0°C to about 200°C , preferably about 0°C to about 150°C , for about 0.5 to 15 hours.

The hydrolysis reaction of the compound (1YY) can be carried out under the same conditions as in the hydrolysis reaction of the compound (1QQ) and the compound (62) in the above Reaction Scheme-41, wherein a pyridinium salt (e.g. pyridinium p-toluenesulfonate, etc.) may be used as the acid.

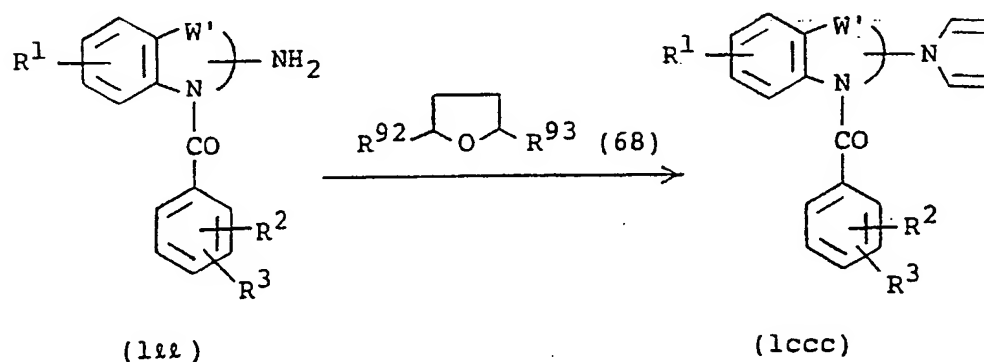
[Reaction Scheme-47]



wherein R^1 , R^2 , R^3 , W' , and R^{26} are as defined above.

The reaction of converting the compound (1A) into the compound (1bbb) can be carried out under the same conditions as in the reaction of converting the compound (1A) into the compound (1C) in the above Reaction Scheme-15.

[Reaction Scheme-48]

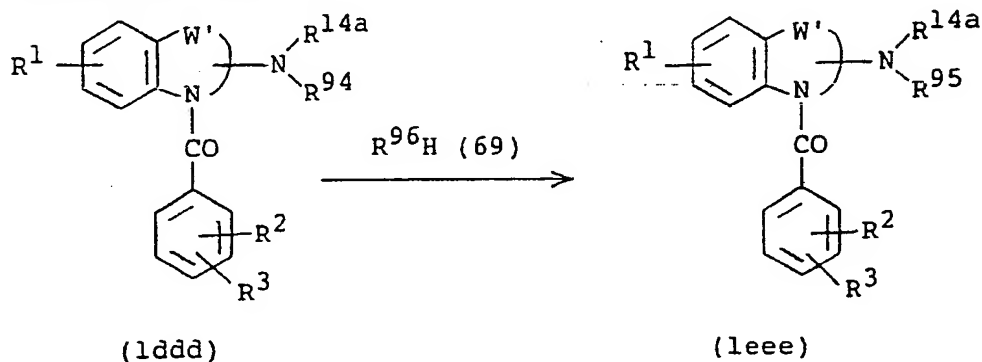


wherein R^1 , R^2 , R^3 and W' are as defined above, R^{92} and R^{93} are each a lower alkoxy.

The reaction of the compound (1ll) and the compound (68) is carried out in an appropriate solvent in the presence of an acid. The solvent includes, for example, water, alcohols (e.g. methanol, ethanol, isopropanol, etc.), ketones (e.g. acetone, methyl ethyl ketone, etc.), ethers (e.g. dioxane, tetrahydrofuran, ethylene glycol dimethyl ether, etc.), fatty

acids (e.g. acetic acid, formic acid, etc.), or a mixture of these solvents. The acid includes, for example, mineral acids (e.g. hydrochloric acid, sulfuric acid, hydrobromic acid, etc.), organic acids (e.g. formic acid, acetic acid, aromatic sulfonic acids, etc.). The reaction is usually carried out at a temperature of from room temperature to about 200°C, preferably from room temperature to about 150°C, for about 0.5 to 5 hours. The compound (68) is usually used in an amount of at least 1 mole, preferably 1 to 2 moles, to 1 mole of the compound (111).

[Reaction Scheme-49]

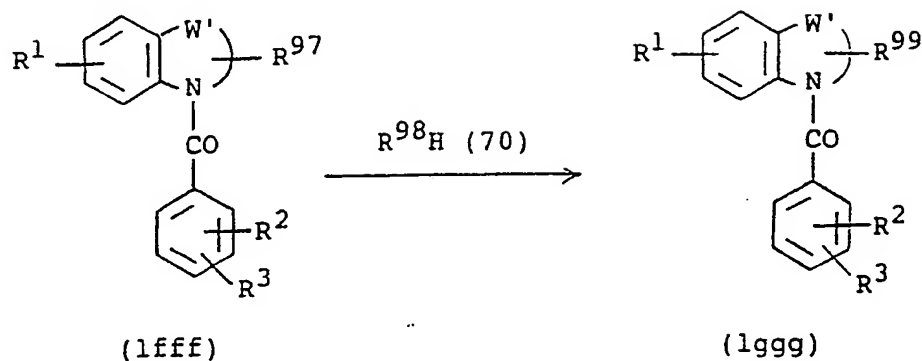


wherein R^1 , R^2 , R^3 , W' , and R^{14a} are as defined above, R^{94} is a halogen-substituted lower alkanoyl, R^{95} is an imidazolyl-substituted lower alkanoyl or an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxy carbonyl, and R^{96} is imidazolyl, or an amino having optionally a substituent selected from a lower alkyl and a lower alkoxy carbonyl.

The reaction of the compound (1ddd) and the compound (69) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above

Reaction Scheme-4.

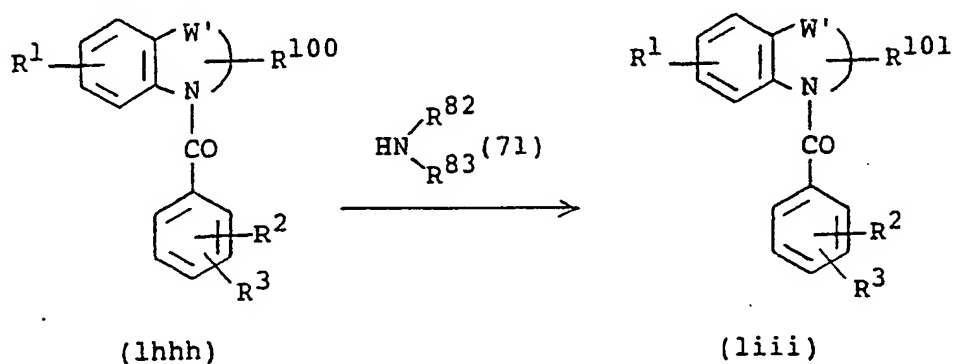
[Reaction Scheme-50]



wherein R^1 , R^2 , R^3 , and W' are as defined above, R^{97} is a lower alkanoyloxy having a halogen substituent, R^{98} is an amino having optionally a lower alkyl substituent, and R^{99} is an amino-lower alkanoyloxy having optionally a lower alkyl substituent.

The reaction of the compound (1fff) and the compound (70) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

[Reaction Scheme-51]

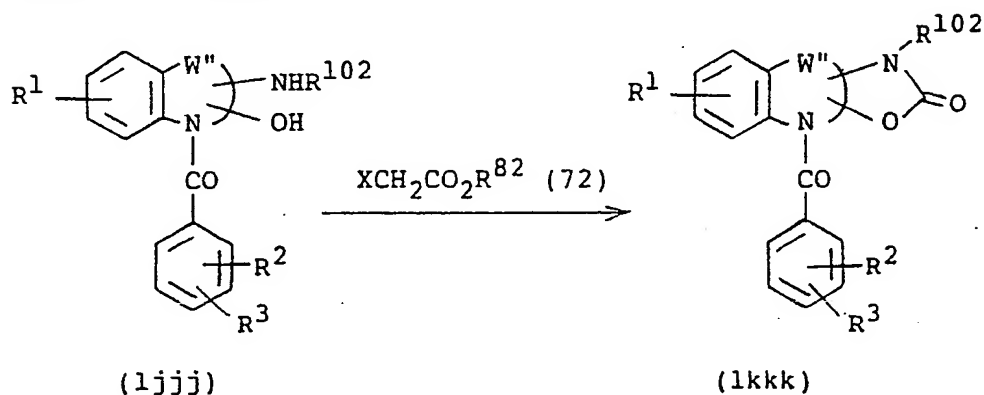


wherein R^1 , R^2 , R^3 , W' , R^{82} , and R^{83} are as defined above, R^{100} is a carboxy-substituted lower alkoxy, and R^{101} is a

group of the formula: $-O-A-CON\begin{matrix} R^{82} \\ R^{83} \end{matrix}$ (A, R^{82} and R^{83} are as defined above).

The reaction of the compound (lhhh) and the compound (71) can be carried out under the same conditions as in the reaction of the compound (2) and the compound (3) in the above Reaction Scheme-1.

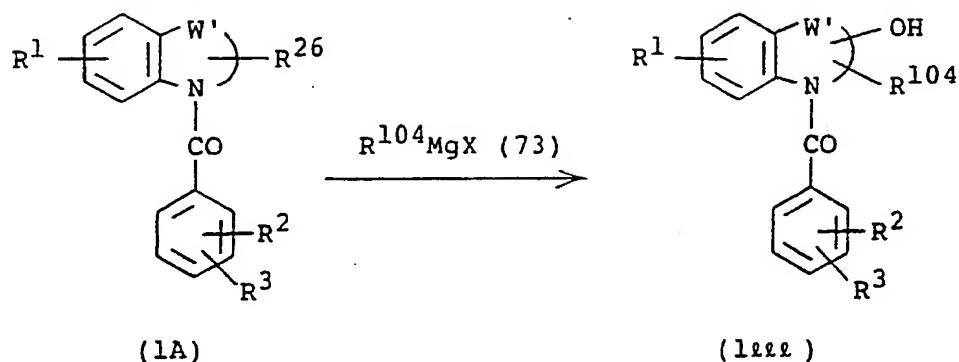
[Reaction Scheme-52]



wherein R^1 , R^2 , R^3 , W'' , X , and R^{82} are as defined above, and R^{102} is hydrogen atom or a lower alkyl, provided that in the compound (1jjj), the groups of the formulae: $-NH-R^{102}$ and $-OH$ are substituted at the positions adjacent each other.

The reaction of the compound (1jjj) and the compound (72) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

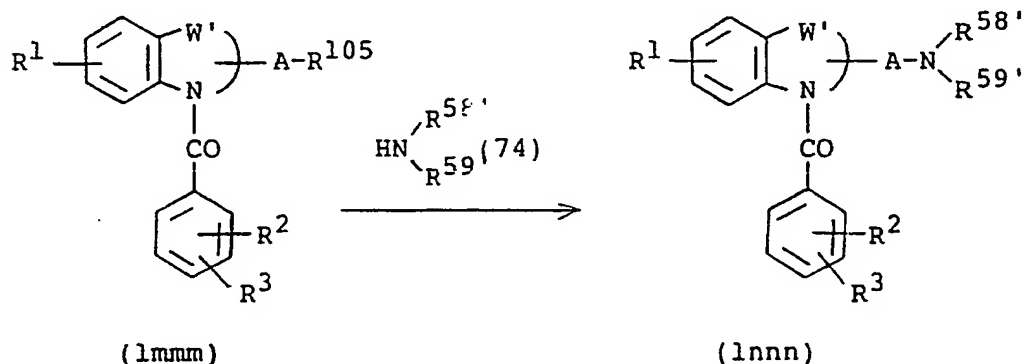
[Reaction Scheme-53]



wherein R^1 , R^2 , R^3 , W' , R^{26} and X are as defined above, and R^{104} is a lower alkyl.

The reaction of the compound (1A) and the compound (73) can be carried out in an appropriate solvent. The solvent includes, for example, ethers (diethyl ether, dioxane, tetrahydrofuran, etc.), aromatic hydrocarbons (e.g. benzene, toluene, xylene, etc.), saturated hydrocarbons (e.g. pentane, hexane, heptane, cyclohexane, etc.), or a mixture of these solvents. The reaction is usually carried out at a temperature of from about -70°C to about 50°C , preferably from about -30°C to room temperature, for about 1 to 6 hours. The compound (73) is used in an amount of at least 1 mole, preferably 1 to 5 moles, to 1 mole of the compound (1A).

[Reaction Scheme-54]



wherein R^1 , R^2 , R^3 , W' , $R^{58'}$, $R^{59'}$, and A are as defined above, and R^{105} is a lower alkylsulfonyloxy.

The reaction of the compound (1mm) and the compound (74) can be carried out under the same conditions as in the reaction of the compound (7) and the compound (8) in the above Reaction Scheme-4.

Among the active compounds (1) of this invention, the compounds having an acidic group can easily be converted into salts by treating with a pharmaceutically acceptable basic compound. The basic compound includes, for example, metal hydroxides such as sodium hydroxide, potassium hydroxide, lithium hydroxide, calcium hydroxide, etc., alkali metal carbonates or hydrogen carbonates such as sodium carbonate, sodium hydrogen carbonate, etc., alkali metal alcoholates such as sodium methylate, potassium ethylate, etc. Besides, among the active compounds (1) of this invention, the compounds having a basic group can easily be converted into acid addition salts thereof by treating with a pharmaceutically acceptable acid. The acid includes, for example, inorganic acids such as sulfuric acid, nitric acid, hydrochloric acid, hydrobromic acid, etc., and organic acids such as acetic acid, p-toluene-sulfonic acid, ethanesulfonic acid, oxalic acid, maleic acid, fumaric acid, citric acid, succinic acid, benzoic acid, etc. These salts are useful as an active ingredient as like as the compounds (1) in the free form.

In addition, the compounds (1) of this invention include stereoisomers and optical isomers, and these isomers are also useful as the active ingredient in this invention.

The compounds of this invention thus obtained can easily be isolated and purified by conventional isolation methods. The isolation methods are, for example, distillation method, recrystallization method, column chromatography, ion exchange chromatography, gel chromatography, affinity chromatography, preparative thin layer chromatography, extraction with a solvent, and the like.

The compounds and their salts of this invention are useful as a vasopressin antagonist and are used in the form of a conventional pharmaceutical preparation. The preparation is prepared by using conventional dilutents or carriers such as fillers, thickening agents, binders, wetting agents, disintegrators, surfactants, lubricants, and the like. The pharmaceutical preparations may be selected from various forms in accordance with the desired utilities, and the representative forms are tablets, pills, powders, solutions, suspensions, emulsions, granules, capsules, suppositories, injections (solutions, suspensions, etc.), and the like. In order to form in tablets, there are used carriers such as vehicles (e.g. lactose, white sugar, sodium chloride, glucose, urea, starches, calcium carbonate, kaolin, crystalline cellulose, silicic acid, etc.), binders (e.g. water, ethanol, propanol, simple syrup, glucose solution, starch solution, gelatin solution, carboxymethyl cellulose, sodium alginate, methyl cellulose, potassium phosphate, polyvinylpyrrolidone, etc.), disintegrators (e.g. dry starch, sodium arginate, agar powder, laminaran powder, sodium hydrogen carbonate, calcium carbonate, polyoxyethylene sorbitan fatty acid esters, sodium laurylsulfate, stearic

monoglyceride, starches, lactose, etc.), disintegration inhibitors (e.g. white sugar, stearin, cacao butter, hydrogenated oils, etc.), absorption promoters (e.g. quaternary ammonium base, sodium laurylsulfate, etc.), wetting agents (e.g. glycerin, starches, etc.), adsorbents (e.g. starches, lactose, kaolin, bentonite, colloidal silicates, etc.), lubricants (e.g. purified talc, stearates, boric acid powder, polyethylene glycol, etc.), and the like. Moreover, the tablets may also be in the form of a conventional coated tablet, such as sugar-coated tablets, gelatin-coated tablets, enteric coated tablets, film coating tablets, or double or multiple layer tablets. In the preparation of pills, the carriers include vehicles (e.g. glucose, lactose, starches, cacao butter, hydrogenated vegetable oils, kaolin, talc, etc.), binders (e.g. gum arabic powder, tragacanth powder, gelatin, ethanol, etc.), disintegrators (e.g. laminaran, agar, etc.), and the like. In the preparation of suppositories, the carriers include, for example, polyethylene glycol, cacao butter, higher alcohols, higher alcohol esters, gelatin, semi-synthetic glycerides, and the like. Capsules can be prepared by charging a mixture of the compound of this invention with the above carriers into hard gelatin capsules or soft capsules in a usual manner. In the preparation of injections, the solutions, emulsions or suspensions are sterilized and are preferably made isotonic with the blood. In the preparation of these solutions, emulsions and suspensions, there are used conventional diluents, such as water, ethyl alcohol, macrogol

(propylene glycol), ethoxylated isostearyl alcohol, polyoxylated isostearyl alcohol, polyoxyethylene sorbitan fatty acid esters, and the like. In this case, the pharmaceutical preparations may also be incorporated with sodium chloride, glucose, or glycerin in an amount sufficient to make them isotonic, and may also be incorporated with conventional solubilizers, buffers, anesthetizing agents. Besides, the pharmaceutical preparations may optionally be incorporated with coloring agents, preservatives, perfumes, flavors, sweetening agents, and other medicaments, if required.

The amount of the active compound of this invention (active ingredient) to be incorporated into the anti-vasopressin preparations is not specified but may be selected from a broad range, but usually, it is preferably in the range of 1 to 70 % by weight, more preferably 5 to 50 % by weight.

The anti-vasopressin preparation of this invention may be administered in any method, and suitable method for administration may be determined in accordance with various forms of preparation, ages, sexes and other conditions of the patients, the degree of severity of diseases, and the like. For instance, tablets, pills, solutions, suspensions, emulsions, granules and capsules are administered orally. The injections are intravenously administered alone or together with a conventional auxiliary liquid (e.g. glucose, amino acid solutions), and further are optionally administered alone in intramuscular, intracutaneous, subcutaneous, or intraperitoneal route, if required. Suppositories are

administered in intrarectal route.

The dosage of the anti-vasopressin agent of this invention may be selected in accordance with the usage, ages, sexes and other conditions of the patients, the degree of severity of the diseases, and the like, but is usually in the range of about 0.6 to 50 mg of the active compound of this invention per 1 kg of body weight of the patient per day. The active compound is preferably contained in an amount of 10 to 1000 mg per the dosage unit.

Brief Description of Drawing

Fig. 1 to Fig. 4 show a chart of NMR (CDCl_3) of the compounds in Examples 978 and 979.

Best Mode for Carrying Out the Invention

The present invention is illustrated by the following Preparations of anti-vasopressin agent, Reference Examples of processes for preparing the starting compounds to be used for preparing the active compounds, Examples of processes for preparing the active compounds, and Experiments of the activities of the active compounds of this invention.

Preparation 1

Film coated tablets are prepared from the following components.

<u>Components</u>	<u>Amount</u>
4-Methylamino-1-[4-(3,5-dichlorobenzoyl-amino)benzoyl]-1,2,3,4-tetrahydroquinoline	150 g

Avicel (tradename of microcrystalline cellulose, manufactured by Asahi Chemical Industry Co., Ltd., Japan)	40 g
Corn starch	30 g
Magnesium stearate	2 g
Hydroxypropyl methylcellulose	10 g
Polyethylene glycol-6000	3 g
Castor oil	40 g
Ethanol	40 g

The active component of this invention, Avicel, corn starch and magnesium stearate are mixed and kneaded and the mixture is tabletted using a conventional pounder (R 10 mm) for sugar coating. The tablets thus obtained are coated with a film coating agent consisting of hydroxypropyl methylcellulose, polyethylene glycol-6000, castor oil and ethanol to give film coated tablets.

Preparation 2

Tablets are prepared from the following components.

<u>Components</u>	<u>Amount</u>
1-[4-(N-Butylanilinoacetyl-amino)benzoyl]- 2,3,4,5-tetrahydro-1H-benzazepine	150 g
Citric acid	1.0 g
Lactose	33.5 g
Dicalcium phosphate	70.0 g
Pullonic F-68	30.0 g
Sodium laurylsulfate	5.0 g
Polyvinylpyrrolidone	5.0 g
Polyethylene glycol (Carbowax 1500)	4.5 g

Polyethylene glycol (Carbowax 6000)	45.0 g
Corn starch	30.0 g
Dry sodium stearate	3.0 g
Dry magnesium stearate	3.0 g
Ethanol	q.s.

The active compound of this invention, citric acid, lactose, dicalcium phosphate, Pullonic F-68 and sodium laurylstearate are mixed. The mixture is screened with No. 60 screen and is granulated with an alcohol solution containing polyvinylpyrrolidone, carbowax 1500 and 6000. If required, an alcohol is added thereto so that the powder mixture is made a paste-like mass. Corn starch is added to the mixture and the mixture is continuously mixed to form uniform particles. The resulting particles are passed through No. 10 screen and entered into a tray and then dried in an oven at 100°C for 12 to 14 hours. The dried particles are screened with No. 16 screen and thereto are added dry sodium laurylsulfate and dry magnesium stearate, and the mixture is tabletted to form the desired shape.

The core tablets thus prepared are vanished and dusted with talc in order to guard from wetting. Undercoating is applied to the core tablets. In order to administer the tablets orally, the core tablets are vanished several times. In order to give round shape and smooth surface to the tablets, further undercoating and coating with lubricant are applied thereto. The tablets are further coated with a coloring coating material until the desired

colored tablets are obtained. After drying, the coated tablets are polished to obtain the desired tablets having uniform gloss.

Preparation 3

An injection preparation is prepared from the following components.

<u>Components</u>	<u>Amount</u>
4-Methyl-1-[4-(2,3-dimethylbenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine	5 g
Polyethylene glycol (molecular weight: 4000)	0.3 g
Sodium chloride	0.9 g
Polyoxyethylene sorbitan monooleate	0.4 g
Sodium metabisulfite	0.1 g
Methyl-paraben	0.18 g
Propyl-paraben	0.02 g
Distilled water for injection	10.0 ml

The above parabens, sodium metabisulfite and sodium chloride are dissolved in distilled water of half volume of the above with stirring at 80°C. The solution thus obtained is cooled to 40°C, and the active compound of this invention and further polyethylene glycol and polyoxyethylene sorbitan monooleate are dissolved in the above solution. To the solution is added distilled water for injection to adjust to the desired volume, and the solution is sterilized by filtering with an appropriate filter paper to give an injection preparation.

Reference Example 1

To a solution of 1,2,3,4-tetrahydroquinoline (28.7 g) in acetone (400 ml) and water (200 ml) is added potassium carbonate (38.8 g), and thereto is added p-nitrobenzoyl chloride (40 g) under ice-cooling and the mixture is stirred at room temperature overnight. To the reaction mixture is added a suitable amount of water. The precipitated crystal is collected by filtration and dried to give 1-(4-nitrobenzoyl)-1,2,3,4-tetrahydroquinoline (40.8 g) as white powder, m.p. 86 - 88°C.

Reference Example 2

To a solution of 10 % Pd-C (5 g) in ethanol (500 ml) is added 1-(4-nitrobenzoyl)-1,2,3,4-tetrahydroquinoline (53.4 g) and the mixture is subjected to catalytic reduction at ordinary temperature under atmospheric pressure of hydrogen. After the reduction, 10 % Pd-C is removed by filtration, and the filtrate is concentrated under reduced pressure to give 1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline (46.7 g) as yellow powder, m.p. 185 - 188°C.

Reference Example 3

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

1-(3-Nitrobenzoyl)-1,2,3,4-tetrahydroquinoline,
white powder, m.p. 134 - 136°C

1-(2-Nitrobenzoyl)-1,2,3,4-tetrahydroquinoline,

yellow powder, m.p. 152 - 154°C

3-Methyl-1-(4-nitrobenzoyl)-1,2,3,4-tetrahydro-quinoline, yellow powder, m.p. 109 - 110°C

4-Methyl-1-(4-nitrobenzoyl)-1,2,3,4-tetrahydro-quinoline, yellow powder, m.p. 134 - 136°C

2-Methyl-1-(4-nitrobenzoyl)-1,2,3,4-tetrahydro-quinoline, yellow powder, m.p. 143 - 145°C

1-(4-Nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 143 - 145°C

1-(3-Methyl-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 100 - 102°C

1-(3-Methoxy-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 146 - 148°C

1-(4-Nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, white powder, m.p. 83 - 85°C

1-(4-Nitrobenzoyl)-3,4-dihydro-2H-1,4-benzoxazine, yellow powder, m.p. 167 - 169°C

1-(4-Nitrobenzoyl)-1,2,3,5-tetrahydro-4,1-benzoxazepine, yellow powder, m.p. 196 - 198°C

1-(4-Nitrobenzoyl)-4-methyl-1,2,3,4-tetrahydro-quinoxaline, brown powder

$^1\text{H-NMR}$ (CDCl_3) δ : 3.03 (3H, s), 3.54 (2H, t, $J=5.7$ Hz), 4.06 (2H, t, $J=5.7$ Hz), 6.2-6.5 (2H, m), 6.70 (1H, d, $J=8.2$ Hz), 6.9-7.1 (1H, m), 7.54 (2H, d, $J=8.8$ Hz), 8.13 (2H, d, $J = 8.8$ Hz)

1-(4-Nitrobenzoyl)-5-methyl-2,3,4,5-tetrahydro-1H-

1,5-benzodiazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.7-2.0 (1H, m), 2.0-2.3 (1H, m), 2.8-3.0 (1H, m), 2.98 (3H, s), 3.0-3.2 (1H, m), 3.4-3.6 (1H, m), 4.6-4.8 (1H, m), 6.5-6.7 (2H, m), 6.94 (1H, d, $J=8.1$ Hz), 7.1-7.2 (1H, m), 7.33 (2H, d, $J=8.9$ Hz), 7.97 (2H, d, $J=8.9$ Hz)

1-(4-Nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, brown oil

$^1\text{H-NMR}$ (CDCl_3) δ : 2.44 (3H, s), 3.0-3.3 (3H, m), 3.77 (1H, d, $J=13.7$ Hz), 4.06 (1H, d, $J=13.6$ Hz), 4.9-5.1 (1H, m), 6.59 (1H, d, $J=7.7$ Hz), 6.97 (1H, t, $J=7.6$ Hz), 7.15 (1H, t, $J=7.4$ Hz), 7.2-7.5 (3H, m), 8.03 (2H, d, $J=8.8$ Hz)

1-(3-Methoxy-4-nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 146 - 148°C

1-(4-Nitrobenzoyl)-4-n-propyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 131 - 133°C

1-(4-Nitrobenzoyl)-5-chloro-1,2,3,4-tetrahydroquinoline, white powder, m.p. 134 - 136°C

1-(4-Nitrobenzoyl)-6-methoxy-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 149 - 151°C

1-(4-Nitrobenzoyl)-6-methyl-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 109 - 110°C

1-(4-Nitrobenzoyl)-7-methoxy-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 139 - 141°C

1-(4-Nitrobenzoyl)-3-(4-methyl-1-piperazinyl)-
1,2,3,4-tetrahydroquinoline, yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 2.29 (3H, s), 2.35-3.20 (11H, m), 3.86-4.15 (2H, m), 6.48-6.63 (1H, m), 6.89 (1H, t, $J=7.4$ Hz), 7.05 (1H, t, $J=7.4$ Hz), 7.22 (1H, d, $J=7.4$ Hz), 7.52 (2H, d, $J=8.8$ Hz), 8.11 (2H, d, $J=8.8$ Hz)

1-(4-Nitrobenzoyl)-3-(1-pyrrolidinyl)-1,2,3,4-tetrahydroquinoline, yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.70-1.95 (4H, m), 2.52-3.30 (7H, m), 3.80-4.22 (2H, m), 6.52 (1H, brs), 6.88 (1H, t, $J=7.6$ Hz), 6.96-7.11 (1H, m), 7.20 (2H, d, $J=7.6$ Hz), 7.54 (2H, d, $J=8.8$ Hz), 8.12 (2H, d, $J=8.8$ Hz)

1-(4-Nitrobenzoyl)-4-oxo-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 189 - 190°C

1-(4-Nitrobenzoyl)-3-hydroxymethyl-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 97 - 100°C

1-(4-Nitrobenzoyl)-3-ethoxycarbonyl-1,2,3,4-tetrahydroquinoline, pale yellow powder, m.p. 162 - 163°C

1-(4-Nitrobenzoyl)-4-dimethylamino-1,2,3,4-tetrahydroquinoline, light brown oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.80-2.02 (1H, m), 2.20-2.50 (7H, m), 3.47 (1H, t, $J=4.9$ Hz), 3.70-3.88 (1H, m), 4.06-4.25 (1H, m), 6.46 (1H, d, $J=7.5$ Hz), 6.89 (1H, t, $J=7.5$ Hz), 7.05 (1H, t, $J=7.5$ Hz), 7.34 (1H, d, $J=7.5$ Hz), 7.50 (2H, d, $J=7.0$ Hz), 8.10 (2H, d, $J=7.0$ Hz)

Reference Example 4

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

1-(3-Aminobenzoyl)-1,2,3,4-tetrahydroquinoline,
white powder, m.p. 128 - 130°C

1-(2-Aminobenzoyl)-1,2,3,4-tetrahydroquinoline,
yellow powder

¹H-NMR (CDCl₃) δ : 2.01 (2H, quint, J=6.6 Hz), 2.81 (2H, t, J=6.6 Hz), 3.86 (2H, t, J=6.4 Hz), 4.6-4.8 (2H, m), 6.43 (1H, t, J=7 Hz), 6.66 (1H, d, J=8 Hz), 6.79 (1H, dd, J=1.4 Hz, J=7.6 Hz), 6.8-7.2 (5H, m)

3-Methyl-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 197 - 200°C

4-Methyl-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 197 - 199°C

2-Methyl-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, yellow powder, m.p. 204 - 206°C

1-(4-Aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 172 - 174°C

1-(3-Methyl-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 156 - 158°C

1-(3-Methoxy-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 165 - 167°C

1-(4-Aminobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, white powder, m.p. 177 - 179°C

1-(4-Aminobenzoyl)-3,4-dihydro-2H-1,4-benzoxazine,

white powder, m.p. 192 - 194°C

1-(4-Aminobenzoyl)-1,2,3,5-tetrahydro-4,1-benz-oxazepine, yellow powder, m.p. 196 - 198°C

1-(4-Aminobenzoyl)-4-methyl-1,2,3,4-tetrahydro-quinoxaline, yellow powder, m.p. 210 - 212°C

1-(4-Aminobenzoyl)-5-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine, white powder, m.p. 159 - 161°C

1-(4-Aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, brown powder, m.p. 169 - 171°C

1-(3-Methoxy-4-aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow oil

¹H-NMR (CDCl₃) δ : 2.41 (3H, s), 2.9-3.2 (3H, m), 3.61 (3H, s), 3.6-4.2 (4H, m), 4.8-5.2 (1H, m), 6.38 (1H, d, J=8.1 Hz), 6.6-6.8 (3H, m), 6.9-7.2 (2H, m), 7.2-7.4 (1H, m)

1-(4-Aminobenzoyl)-4-n-propyl-2,3,4,5-tetrahydro-1H-1,4-benzazepine, brown powder, m.p. 151 - 153°C

1-(4-Aminobenzoyl)-5-chloro-1,2,3,4-tetrahydro-quinoline, white powder, m.p. 174 - 175°C

1-(4-Aminobenzoyl)-6-methoxy-1,2,3,4-tetrahydro-quinoline, pale yellow powder, m.p. 159 - 160°C

1-(4-Aminobenzoyl)-6-methyl-1,2,3,4-tetrahydro-quinoline, white powder, m.p. 145 - 146°C

1-(4-Aminobenzoyl)-7-methoxy-1,2,3,4-tetrahydro-quinoline, pale yellow powder, m.p. 150 - 151°C

1-(4-Aminobenzoyl)-3-(4-methyl-1-piperazinyl)-1,2,3,4-tetrahydroquinoline, light beige powder, m.p. 157 -

159°C

1-(4-Aminobenzoyl)-3-(1-pyrrolidinyl)-1,2,3,4-tetrahydroquinoline, pale yellow powder, m.p. 173 - 174.5°C

1-(4-Aminobenzoyl)-2,3-dihydro-4(1H)-quinolinone, pale yellow powder, m.p. 178 - 180°C

1-(4-Aminobenzoyl)-3-hydroxymethyl-1,2,3,4-tetrahydroquinoline, white powder, m.p. 179 - 181°C

1-(4-Aminobenzoyl)-3-ethoxycarbonyl-1,2,3,4-tetrahydroquinoline, pale yellow amorphous

^1H -NMR (CDCl_3) δ : 1.21 (3H, t, $J=7.1$ Hz), 3.00-3.24 (3H, m), 3.70-4.30 (6H, m), 6.48 (2H, d, $J=8.5$ Hz), 6.69 (1H, d, $J=7.9$ Hz), 6.77-7.30 (5H, m)

1-(4-Aminobenzoyl)-4-dimethylamino-1,2,3,4-tetrahydroquinoline, brown oil

^1H -NMR (CDCl_3) δ : 1.83-2.05 (1H, m), 2.13-2.30 (1H, m), 2.34 (6H, m), 3.55-3.83 (2H, m), 3.89 (1H, brs), 3.97-4.18 (1H, m), 6.47 (2H, d, $J=7.0$ Hz), 6.68 (1H, d, $J=7.9$ Hz), 6.85-7.05 (2H, m), 7.20 (2H, d, $J=7.0$ Hz), 7.37 (1H, d, $J=7.4$ Hz)

Reference Example 5

To terephthalic acid monomethyl ester (15 g) is added thionyl chloride (100 ml) and the mixture is refluxed for 2 hours. The thionyl chloride is distilled off under reduced pressure to give terephthalic acid chloride monomethyl ester. Separately, to a solution of 1,2,3,4-tetrahydroquinoline (14.4 g) in dichloromethane (200 ml) is

added triethylamine (16.9 g) and further thereto is added slowly terephthalic acid chloride monomethyl ester obtained above under ice-cooling. Then, the mixture is stirred at room temperature for 1 hour. After completion of the reaction, water is added to the reaction mixture. The mixture is extracted with dichloromethane and dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane) to give 1-(4-methoxycarbonylbenzoyl)-1,2,3,4-tetrahydroquinoline (22.7 g) as white powder, m.p. 72 - 74°C.

Reference Example 6

To a solution of 1-(4-methoxycarbonylbenzoyl)-1,2,3,4-tetrahydroquinoline (22.7 g) in methanol (300 ml) is added 5 % aqueous sodium hydroxide solution (150 ml) and the mixture is refluxed for 2 hours. Methanol is distilled off under reduced pressure and the resulting residue is acidified with diluted hydrochloric acid, extracted with diethyl ether, and dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting crystal is collected by filtration to give 1-(4-carboxybenzoyl)-1,2,3,4-tetrahydroquinoline (13.2 g) as white powder, m.p. 181 - 183°C.

Reference Example 7

Using the suitable starting materials, the

following compounds are obtained in the same manner as in Reference Example 1.

5-Dimethylamino-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, pale yellow powder, m.p. 139 - 142°C

5-Dimethylamino-1-(3-methoxy-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 139 - 141°C

4-(N-Methyl-N-ethylamino)-1-(4-nitrobenzoyl)-1,2,3,4-tetrahydroquinoline, pale yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.11 (3H, t, $J=7.1$ Hz), 1.90-2.25 (2H, m), 2.30 (3H, s), 2.57 (2H, q, $J=7.1$ Hz), 3.55-3.85 (2H, m), 4.00-4.21 (1H, m), 6.35-6.60 (1H, m), 6.80-6.98 (1H, t, $J=7.9$ Hz), 7.00-7.15 (1H, m), 7.33-7.60 (3H, m), 8.10 (2H, d, $J=8.8$ Hz)

4-Dimethylamino-1-(3-methoxy-4-nitrobenzoyl)-1,2,3,4-tetrahydroquinoline, brown oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.80-2.05 (1H, m), 2.33 (6H, s), 2.30-2.50 (1H, m), 3.40-3.52 (1H, m), 3.78 (3H, s), 3.70-3.88 (1H, m), 4.04-4.24 (1H, m), 6.52 (1H, d, $J=8.2$ Hz), 6.85-7.13 (4H, m), 7.28-7.38 (1H, m), 7.71 (1H, d, $J=8.2$ Hz)

1-(4-Nitrobenzoyl)-4-ethyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.16 (3H, t, $J=7.1$ Hz), 2.5-2.7 (2H, m), 3.0-3.3 (3H, m), 3.98 (2H, q, $J=14$ Hz), 4.8-5.0 (1H, m), 6.59 (1H, d, $J=7.7$ Hz), 6.96 (1H, t, $J=7.7$ Hz),

7.14 (1H, t, J=7.4 Hz), 7.2-7.4 (3H, m), 8.02 (2H, d, J=8.8 Hz)

1-(4-Nitrobenzoyl)-4-isopropyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 222 - 223°C

1-(4-Nitrobenzoyl)-4-cyclohexyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, brown oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.0-1.5 (5H, m), 1.5-2.1 (5H, m), 2.4-2.7 (1H, m), 2.9-3.3 (3H, m), 3.94 (2H, s), 4.9-5.1 (1H, m), 6.57 (1H, d, J=7.7 Hz), 6.8-7.0 (1H, m), 7.0-7.2 (1H, m), 7.2-7.4 (3H, m), 8.01 (2H, d, J=8.8 Hz)

1-(4-Nitrobenzoyl)-5-methyl-1,2,3,4,5,6-hexahydro-1,5-benzodiazocine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.5-2.1 (2H, m), 2.40 (3H, s), 2.3-2.6 (1H, m), 2.8-3.2 (2H, m), 3.50 (1H, d, J=13.4 Hz), 3.84 (1H, d, J=13.4 Hz), 4.8-5.0 (1H, m), 7.0-7.3 (4H, m), 7.41 (2H, d, J=8.9 Hz), 8.00 (2H, d, J=8.9 Hz)

1-(4-Nitrobenzoyl)-1,2,3,4-tetrahydro-5,1-benzoxazepine, white powder, m.p. 144.5 - 145.5°C

1-(2-Nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 177 - 180°C

1-(3-Nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 145 - 146°C

6-Fluoro-1-(4-nitrobenzoyl)-1,2,3,4-tetrahydroquinoline, yellow needles, m.p. 145 - 146°C

Reference Example 8

Using the suitable starting materials, the

following compounds are obtained in the same manner as in Reference Example 2.

5-Dimethylamino-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 120 - 122°C

5-Dimethylamino-1-(3-methoxy-4-amino)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 121 - 123°C

4-(N-Methy-N-ethylamino)-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, orange amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.11 (3H, t, $J=7.1$ Hz), 1.90-2.20 (2H, m), 2.28 (3H, s), 2.26 (2H, q, $J=7.1$ Hz), 3.60-4.25 (5H, m), 6.48 (2H, d, $J=8.5$ Hz), 6.69 (1H, d, $J=7.9$ Hz), 6.80-7.05 (2H, m), 7.24 (2H, d, $J=8.5$ Hz), 7.46 (1H, d, $J=6.2$ Hz)

4-Dimethylamino-1-(3-methoxy-4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, pale yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.83-2.04 (1H, m), 2.15-2.32 (1H, m), 2.33 (6H, s), 3.50-3.82 (2H, m), 3.64 (3H, s), 3.95-4.18 (3H, m), 6.50 (1H, d, $J=7.9$ Hz), 6.65 (1H, dd, $J=7.9$ Hz, 1.1 Hz), 6.78-7.03 (4H, m), 7.34 (1H, dd, $J=7.5$ Hz, 1.5 Hz)

1-(4-Aminobenzoyl)-4-ethyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, white powder, m.p. 186 - 188°C

1-(4-Aminobenzoyl)-4-isopropyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, white powder, m.p. 191 - 192°C

1-(4-Aminobenzoyl)-4-cyclohexyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, white powder, m.p. 149.5 - 150.5°C

1-(4-Aminobenzoyl)-5-methyl-1,2,3,4,5,6-hexahydro-1,5-benzodiazocine, yellow powder, m.p. 143 - 145°C

1-(4-Aminobenzoyl)-1,2,3,4-tetrahydro-5,1-benzoxazepine, yellow powder, m.p. 163.5 - 164.5°C

1-(2-Aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, yellow powder, m.p. 144 - 146°C

1-(3-Aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, white powder, mp. 153 - 155°C

6-Fluoro-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, white powder, m.p. 160.5 - 161.5°C

Reference Example 9

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

1-(2-Chloro-4-nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

$^1\text{H-NMR}$ (CDCl_3) δ : 2.40 (3H, s), 2.96-3.33 (3H, m), 3.60-3.79 (1H, m), 3.96-4.23 (1H, m), 4.70-4.91 (1H, m), 6.80-7.43 (5H, m), 7.80-7.99 (1H, m), 8.08-8.21 (1H, m)

1-(3-Methyl-4-nitrobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

$^1\text{H-NMR}$ (CDCl_3) δ : 2.43 (3H, s), 2.48 (3H, s), 2.92-3.28 (3H, m), 3.91 (2H, AB-q, $J=13.9$ Hz, 45.5 Hz), 4.77-5.01 (1H, m), 6.54-6.70 (1H, m), 6.88-7.37 (5H, m), 7.62-7.78 (1H, m)

5-Dimethylamino-1-(2-chloro-4-nitrobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine

$^1\text{H-NMR}$ (CDCl_3) δ : 1.23-2.57 (10H, m), 2.68-5.15 (3H, m), 6.79-7.45 (4H, m), 7.49-8.39 (3H, m)

5-Oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder (ethyl acetate/n-hexane), m.p. 147 - 148°C

5-Hydroxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder (ethyl acetate/n-hexane), m.p. 148 - 150°C

5-Methoxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.47-2.48 (4H, m), 2.70-3.10 (1H, m), 3.26-3.64 (3H, m), 4.29-5.12 (2H, m), 6.60 (1H, d, $J=7.7$ Hz), 6.88-7.67 (5H, m), 7.92-8.12 (2H, m)

5-Ethoxycarbonylmethoxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 107 - 108°C (recrystallized from ethyl acetate/n-hexane)

5-(4-Bromobutoxy)-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.49-2.55 (8H, m), 2.72-3.07 (1H, m), 3.24-3.77 (4H, m), 4.40-5.15 (2H, m), 6.53-6.66 (1H, m), 6.91-7.06 (1H, m), 7.07-7.80 (4H, m), 7.94-8.13 (2H, m)

5-(4-Dimethylaminobutoxy)-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.51-1.88 (6H, m), 2.23-2.61

(4H, m), 2.27 (3H, s), 2.35 (3H, s), 2.74-3.14 (1H, m),
3.55-3.77 (2H, m), 4.48-5.11 (2H, m), 6.54-6.66 (1H, m),
6.91-7.04 (1H, m), 7.06-7.80 (4H, m), 7.93-8.11 (2H, m)

5-[4-(Phthalimid-1-yl)propoxy-1-(4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.48-2.56 (6H, m), 2.71-3.05
(1H, m), 3.40-4.05 (4H, m), 4.47-5.11 (2H, m), 6.50-6.64
(1H, m), 6.84-7.03 (1H, m), 7.03-7.20 (1H, m), 7.20-7.57
(2H, m), 7.57-7.93 (5H, m), 7.97-8.20 (2H, m)

5-Chloro-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-
benzazepine, light brown powder

$^1\text{H-NMR}$ (CDCl_3) δ : 1.75-3.3 (4H, m), 4.6-6.25 (3H,
m), 6.45-6.7 (1H, m), 6.8-7.5 (4H, m), 7.55-7.7 (1H, m),
7.9-8.1 (2H, m)

5-Oxo-1-(2-chloro-4-nitrobenzoyl)-2,3,4,5-tetra-
hydro-1H-benzazepine, pale yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.95-2.45 (2H, m), 2.94 (1H, t,
 $J=6$ Hz), 3.05-5.3 (2H, m), 6.96-7.1 (1H, m), 7.12-7.5 (3H,
m), 7.75-7.85 (1H, m), 7.95-8.1 (1H, m), 8.14 (1H, s)

4-Dimethylaminomethyl-1-(4-nitrobenzoyl)-1,2,3,4-
tetrahydroquinoline, white powder, m.p. 117 - 119°C

3-Dimethylamino-1-(4-nitrobenzoyl)-2,3,4,5-
tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.5-1.7 (1H, m), 2.1-2.4 (1H,
m), 2.42 (6H, s), 2.6-2.7 (1H, m), 2.8-3.0 (3H, m), 5.1-5.3
(1H, m), 6.62 (1H, d, $J=7.8$ Hz), 6.95 (1H, t, $J=7.7$ Hz),

7.14 (1H, t, J=7.5 Hz), 7.2-7.4 (3H, m), 8.00 (2H, d, J=8.9 Hz)

3-Dimethylamino-1-(3-methoxy-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

¹H-NMR (CDCl₃) δ : 1.5-1.7 (1H, m), 2.0-2.3 (1H, m), 2.41 (6H, s), 2.5-2.8 (1H, m), 2.8-3.0 (3H, m), 3.75 (3H, s), 5.1-5.3 (1H, m), 6.6-6.8 (2H, m), 6.9-7.3 (4H, m), 7.59 (1H, d, J=8.3 Hz)

4-(4-Nitrobenzoyl)-3,4-dihydro-2H-1,4-benzothiazine, yellow powder, m.p. 180 - 182°C

5-(4-Nitrobenzoyl)-2,3,4,5-tetrahydro-1,5-benzothiazepine, yellow powder, m.p. 162 - 163°C

Reference Example 10

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

1-(2-Chloro-4-aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine, white powder (recrystallized from methanol/diethyl ether), m.p. 194.5 - 195.5°C

1-(3-Methyl-4-aminobenzoyl)-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

¹H-NMR (CDCl₃) δ : 2.01 (3H, s), 2.41 (3H, s), 2.82-3.21 (3H, m), 3.50-4.21 (4H, m), 4.78-5.14 (1H, m), 6.24-6.40 (1H, m), 6.59-6.82 (2H, m), 6.90-7.18 (3H, m), 7.19-7.34 (1H, m)

5-Dimethylamino-1-(2-chloro-4-aminobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, white powder
(recrystallized from dichloromethane/diethyl ether), m.p.
162 - 164°C

5-Dimethylamino-1-(2-methoxy-4-aminobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine (recrystallized from
methanol/diethyl ether)

$^1\text{H-NMR}$ (CDCl_3) δ : 1.23-2.80 (11H, m), 2.90-3.38
(1H, m), 3.50-5.19 (6H, m), 5.87-6.41 (2H, m), 6.65-7.56
(5H, m)

5-Methoxy-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-
benzazepine, white powder (recrystallized from ethyl
acetate/n-hexane), m.p. 154 - 155°C

5-Ethoxycarbonylmethoxy-1-(4-aminobenzoyl)-2,3,4,5-
tetrahydro-1H-benzazepine, white powder (recrystallized from
ethyl acetate/n-hexane), m.p. 231 - 232°C

5-(4-Dimethylaminobutoxy)-1-(4-aminobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, colorless oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.47-1.83 (6H, m), 1.83-2.54
(4H, m), 2.29 (6H, s), 2.61-3.00 (1H, m), 3.36-3.76 (2H, m),
4.35-5.20 (2H, m), 6.27-6.48 (2H, m), 6.57-6.76 (1H, m),
6.90-7.61 (5H, m)

5-[4-(Phthalimid-1-yl)propoxy]-1-(4-aminobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.30-2.47 (6H, m), 2.57-3.01
(1H, m), 3.30-4.06 (4H, m), 4.34-5.20 (2H, m), 6.30-6.53

(2H, m), 6.57-6.78 (1H, m), 6.87-7.57 (5H, m), 7.62-7.76
(2H, m), 7.76-7.97 (2H, m)

5-Chloro-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, pale yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.35-4.3 (7H, m), 4.55-6.7 (2H, m), 6.3-6.55 (2H, m), 6.6-6.8 (1H, m), 6.85-7.45 (5H, m)

5-Oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, pale yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.95-2.35 (2H, m), 2.89 (2H, t, $J=6.3$ Hz), 3.0-5.3 (4H, m), 6.35-6.47 (2H, m), 6.72-6.83 (1H, m), 7.0-7.15 (2H, m), 7.18-7.32 (2H, m), 7.81-7.93 (1H, m)

5-Oxo-1-(2-chloro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder

$^1\text{H-NMR}$ (CDCl_3) δ : 1.85-2.3 (2H, m), 2.87 (2H, t, $J=6.2$ Hz), 3.1-4.75 (4H, m), 6.15-7.5 (6H, m), 7.65-7.9 (1H, m)

4-Dimethylaminomethyl-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline, white powder, m.p. 123 - 125°C

3-Dimethylamino-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 175 - 177°C

3-Dimethylamino-1-(3-methoxy-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.5-1.7 (1H, m), 2.1-2.3 (1H, m), 2.3-2.6 (1H, m), 2.40 (6H, s), 2.7-3.0 (3H, m), 3.60 (3H, s), 3.8-4.0 (2H, br), 5.2-5.4 (1H, m), 6.37 (1H, d,

J=8.2 Hz), 6.5-6.8 (3H, m), 6.9-7.4 (3H, m)

4-(4-Aminobenzoyl)-3,4-dihydro-2H-1,4-benzothiazine, yellow powder, m.p. 207 - 210°C

5-(4-Aminobenzoyl)-2,3,4,5-tetrahydro-1,5-benzothiazepine, yellow powder, m.p. 193 - 195°C

Reference Example 11

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

5-Carbamoyloxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 243 - 244°C (recrystallized from ethyl acetate/diisopropyl ether)

5-Methylaminocarbonyloxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 207 - 208°C (recrystallized from ethyl acetate/n-hexane)

5-Dimethylaminocarbonyloxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 155 - 156°C (recrystallized from ethyl acetate/diisopropyl ether/n-hexane)

5-Methylidenyl-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless prisms, m.p. 133.5 - 134°C (recrystallized from ethyl acetate/diisopropyl ether)

5-Oxo-6-methyl-1-(2-chloro-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless prisms, m.p. 90 - 92°C (recrystallized from ethanol)

1-(4-Nitrobenzoyl)-1,2,3,5-tetrahydro-4,1-

benzothiazepine, yellow powder, m.p. 185 - 187°C

(recrystallized from dichloromethane/diethyl ether)

5-Dimethylamino-1-(2-dimethylamino-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 123 -
125°C (recrystallized from diethyl ether/dichloromethane)

5-Oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-1,4-
benzodiazepine, white powder, m.p. 201.5 - 202.5°C
(recrystallized from diethyl ether/dichloromethane)

5-Oxo-4-methyl-1-(4-nitrobenzoyl)-2,3,4,5-
tetrahydro-1H-1,4-benzodiazepine, white powder, m.p. 136 -
138°C (recrystallized from diethyl ether/dichloromethane)

5-Dimethylamino-1-(3-methyl-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.16-3.18 (11H, m), 2.18 (3H,
s), 3.40-5.15 (2H, m), 6.50-7.68 (6H, m), 7.70-7.84 (1H, m)

5-Dimethylamino-1-(2-methyl-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ : 1.19-2.86 (11H, m), 2.20 (3H,
s), 2.94-3.24 (1H, m), 3.36-5.18 (1H, m), 6.49-8.20 (7H, m)

5-Dimethylamino-1-(2-fluoro-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 1.21-2.66 (10H, m), 2.66-5.11
(3H, m), 6.63-8.25 (7H, m)

5-Dimethylamino-1-(3-fluoro-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 152 -
152.5°C (recrystallized from chloroform/diethyl ether)

Reference Example 12

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

5-Carbamoyloxy-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 215 - 216°C (recrystallized from ethyl acetate/n-hexane)

5-Methylaminocarbonyloxy-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 192 - 195°C (recrystallized from ethyl acetate/n-hexane)

5-Dimethylaminocarbonyloxy-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 228 - 230°C (recrystallized from ethyl acetate/diisopropyl ether)

5-Methyl-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 155 - 156°C (recrystallized from ethyl acetate/n-hexane)

5-Oxo-6-methyl-1-(2-chloro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 193 - 195°C (recrystallized from ethanol)

1-(4-Aminobenzoyl)-1,2,3,5-tetrahydro-4,1-benzothiazepine, white powder, m.p. 179 - 180°C (recrystallized from dichloromethane/diethyl ether)

5-Dimethylamino-1-(2-dimethylamino-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 163 - 165°C (recrystallized from diethyl ether/dichloromethane)

5-Oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-

benzazepine, yellow powder, m.p. 195 - 197°C (recrystallized from diethyl ether/dichloromethane)

5-Oxo-4-methyl-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-1,4-benzazepine, yellow powder, m.p. 190 - 192°C (recrystallized from diethyl ether/dichloromethane)

5-Dimethylamino-1-(2-ethoxy-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 111 - 114°C (recrystallized from diethyl ether)

5-Dimethylamino-1-(3-methyl-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ : 0.66-2.56 (14H, m), 2.93-5.22 (4H, m), 6.23-7.80 (7H, m)

5-Dimethylamino-1-(2-methyl-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 154 - 156°C (recrystallized from methanol/diethyl ether)

5-Dimethylamino-1-(2-fluoro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 161 - 163°C (recrystallized from dichloromethane/diethyl ether)

5-Dimethylamino-1-(3-fluoro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 156 - 157°C (recrystallized from methanol/diethyl ether)

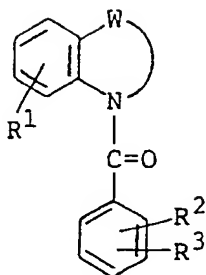
5-Oxo-1-(2-methoxy-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless prisms, m.p. 160 - 160.5°C (recrystallized from methanol/diethyl ether)

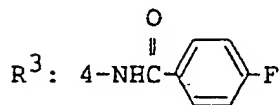
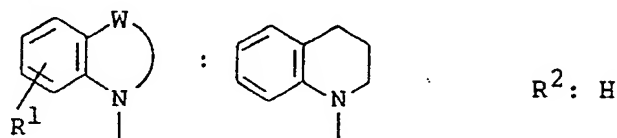
Example 1

To a solution of 1,2,3,4-tetrahydroquinoline (28.7

g) in acetone (400 ml) and water (200 ml) is added potassium carbonate (38.8 g) and further thereto is added 4-benzoyl-aminobenzoyl chloride (56 g) under ice-cooling. The mixture is stirred at room temperature overnight. Water is added to the reaction mixture, and the mixture is extracted with dichloromethane. The extract is dried over magnesium sulfate, and the solvent is distilled off under reduced pressure. The resulting residue is purified by silica gel column chromatography and recrystallized from methanol to give 1-[4-(benzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (57 g) as white powder, m.p. 202.5 - 203.5°C.

Using the suitable starting materials, the compounds as shown in the following Table 1 are obtained in the same manner as in Example 1.

Table 1

Example 2**Structure**

Crystalline form: Light yellow powder

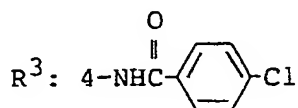
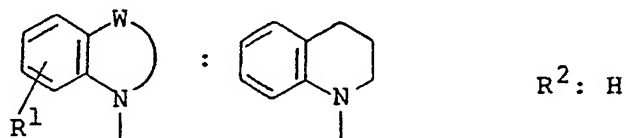
Recrystallization solvent: Methanol

Melting Point: 198.5 - 199.5°C

Form: Free

Example 3

Structure



Crystalline form: White powder

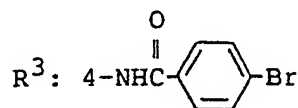
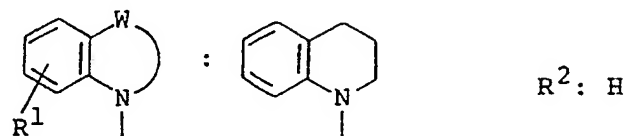
Recrystallization solvent: Methanol

Melting Point: 200.5 - 201.5°C

Form: Free

Example 4

Structure



Crystalline form: Yellow powder

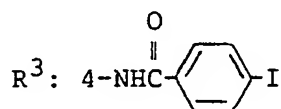
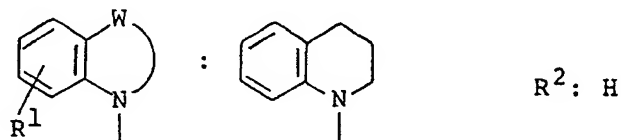
Recrystallization solvent: Methanol

Melting Point: 206 - 207°C

Form: Free

Example 5

Structure



Crystalline form: Yellow powder

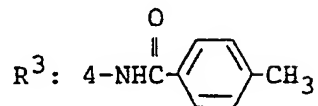
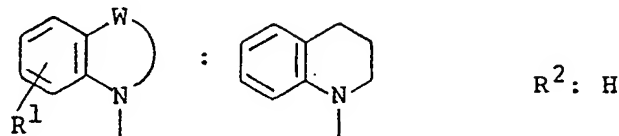
Recrystallization solvent: Methanol

Melting Point: 216 - 217°C

Form: Free

Example 6

Structure



Crystalline form: White powder

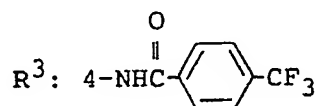
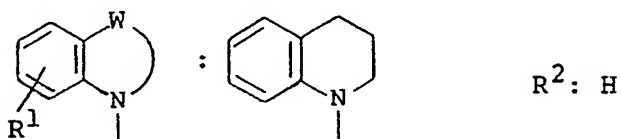
Recrystallization solvent: Methanol

Melting Point: 202 - 203°C

Form: Free

Example 7

Structure



Crystalline form: White powder

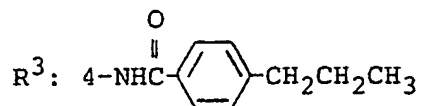
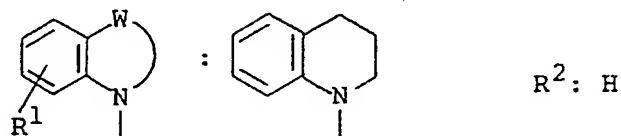
Recrystallization solvent: Methanol

Melting Point: 212 - 213°C

Form: Free

Example 8

Structure



Crystalline form: White powder

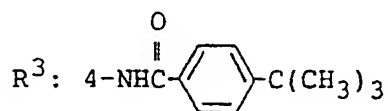
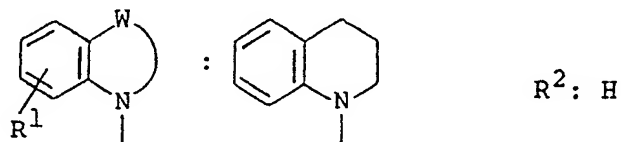
Recrystallization solvent: Methanol

Melting Point: 167.5 - 168.5°C

Form: Free

Example 9

Structure



Crystalline form: White powder

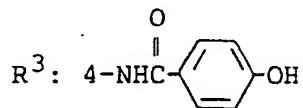
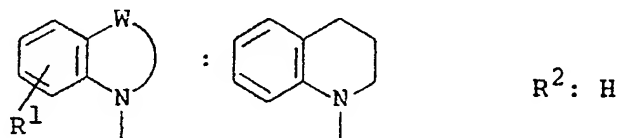
Recrystallization solvent: Methanol

Melting Point: 205 - 206°C

Form: Free

Example 10

Structure



Crystalline form: White powder

Recrystallization solvent: Methanol

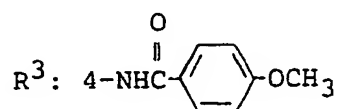
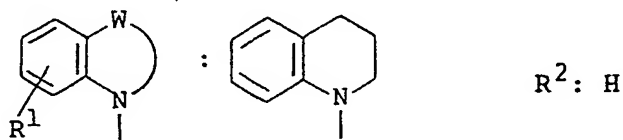
Melting Point: >300°C

NMR analysis: 1)

Form: Free

Example 11

Structure



Crystalline form: Yellow powder

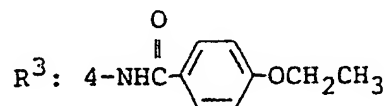
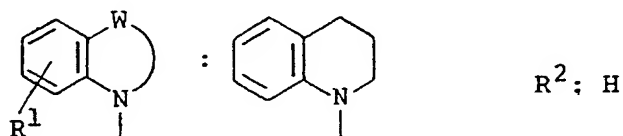
Recrystallization solvent: Methanol

Melting Point: 176 - 177°C

Form: Free

Example 12

Structure



Crystalline form: White powder

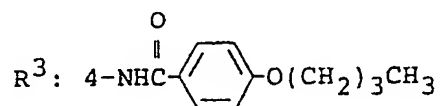
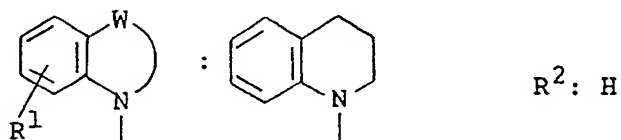
Recrystallization solvent: Methanol

Melting Point: 219 - 220°C

Form: Free

Example 13

Structure



Crystalline form: White powder

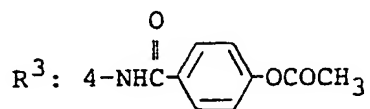
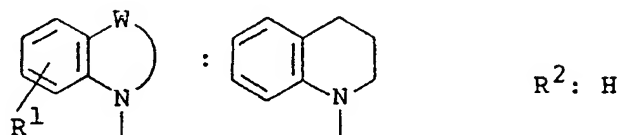
Recrystallization solvent: Methanol

Melting Point: 193 - 194°C

Form: Free

Example 14

Structure



Crystalline form: White powder

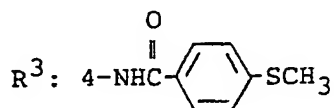
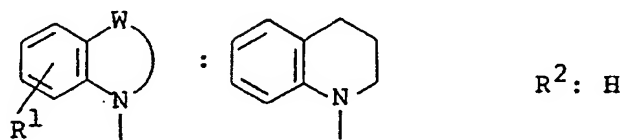
Recrystallization solvent: Methanol

Melting Point: 232 - 233°C

Form: Free

Example 15

Structure



Crystalline form: White powder

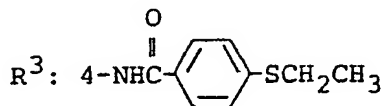
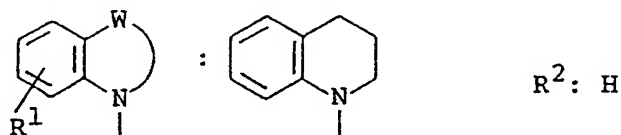
Recrystallization solvent: Methanol

Melting Point: 209 - 210°C

Form: Free

Example 16

Structure



Crystalline form: White powder

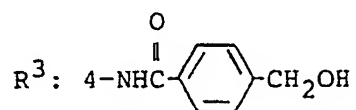
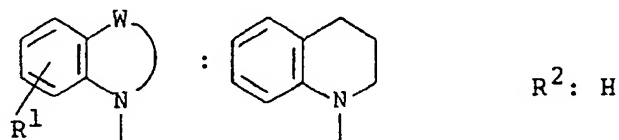
Recrystallization solvent: Methanol

Melting Point: 184.5 - 185.5°C

Form: Free

Example 17

Structure



Crystalline form: White powder

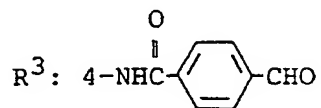
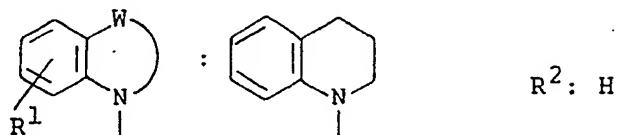
Recrystallization solvent: Methanol

Melting Point: 224.5 - 225.5°C

Form: Free

Example 18

Structure



Crystalline form: White powder

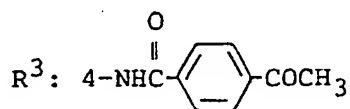
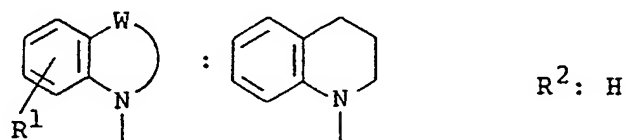
Recrystallization solvent: Methanol

Melting Point: 220.5 - 221.5°C

Form: Free

Example 19

Structure



Crystalline form: Yellow powder

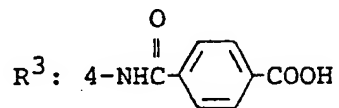
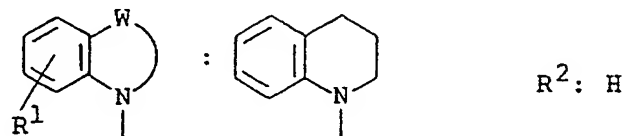
Recrystallization solvent: Methanol

Melting Point: 231 - 232°C

Form: Free

Example 20

Structure



Crystalline form: White powder

Recrystallization solvent: Methanol

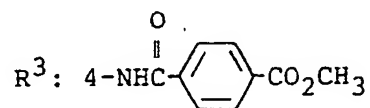
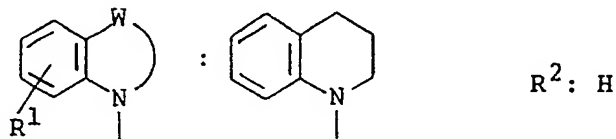
Melting Point: >300°C

NMR analysis: 2)

Form: Free

Example 21

Structure



Crystalline form: White powder

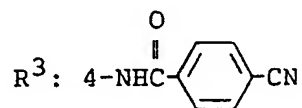
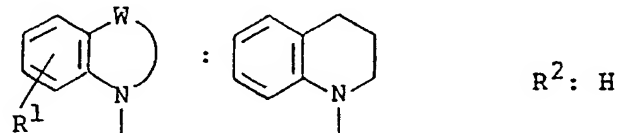
Recrystallization solvent: Methanol

Melting Point: 208 - 209°C

Form: Free

Example 22

Structure



Crystalline form: White powder

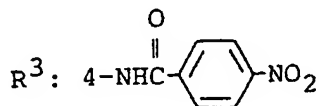
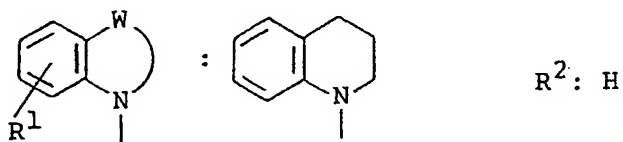
Recrystallization solvent: Methanol

Melting Point: 234.5 - 235.5°C

Form: Free

Example 23

Structure



Crystalline form: Yellow powder

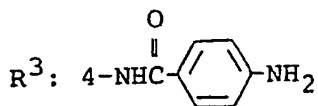
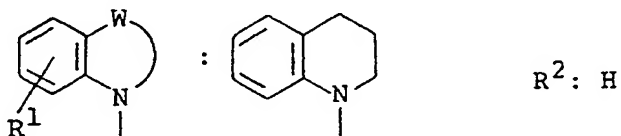
Recrystallization solvent: Methanol

Melting Point: 263.5 - 264.5°C

Form: Free

Example 24

Structure



Crystalline form: White powder

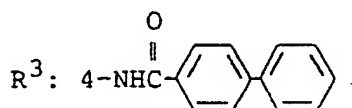
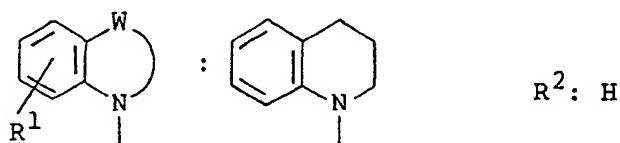
Recrystallization solvent: Methanol

Melting Point: 237 - 238°C

Form: Free

Example 25

Structure



Crystalline form: White powder

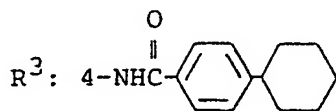
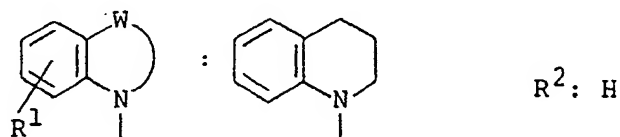
Recrystallization solvent: Methanol

Melting Point: 234 - 235°C

Form: Free

Example 26

Structure



Crystalline form: White powder

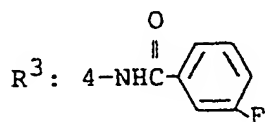
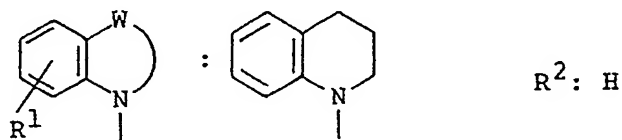
Recrystallization solvent: Methanol

Melting Point: 236.5 - 237.5°C

Form: Free

Example 27

Structure



Crystalline form: White powder

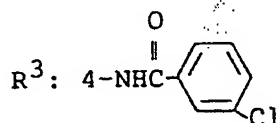
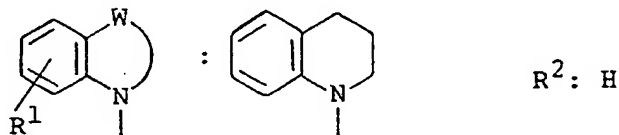
Recrystallization solvent: Methanol

Melting Point: 206.5 - 207.5°C

Form: Free

Example 28

Structure



Crystalline form: White powder

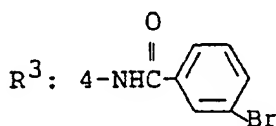
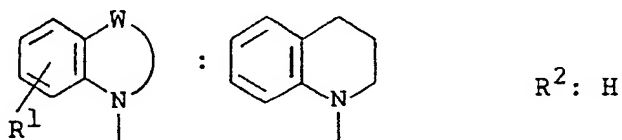
Recrystallization solvent: Methanol

Melting Point: 210 - 211°C

Form: Free

Example 29

Structure



Crystalline form: White powder

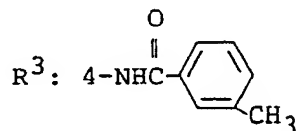
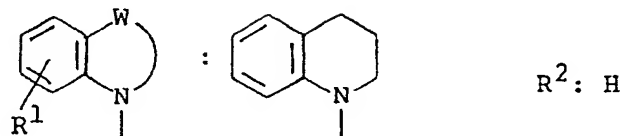
Recrystallization solvent: Methanol

Melting Point: 210.5 - 211.5°C

Form: Free

Example 30

Structure



Crystalline form: White powder

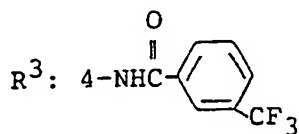
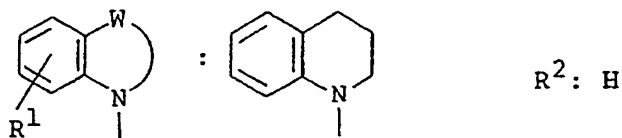
Recrystallization solvent: Methanol

Melting Point: 178 - 179°C

Form: Free

Example 31

Structure



Crystalline form: White powder

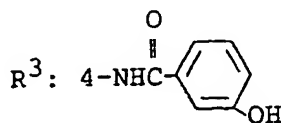
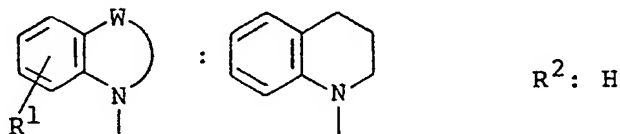
Recrystallization solvent: Methanol

Melting Point: 192 - 193°C

Form: Free

Example 32

Structure



Crystalline form: White powder

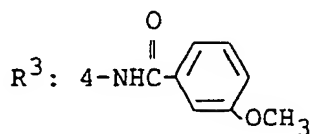
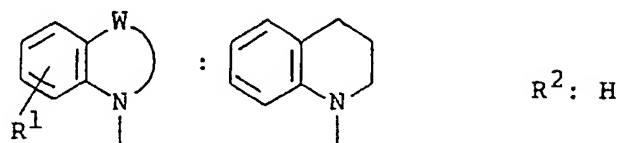
Recrystallization solvent: Methanol

Melting Point: 217 - 218°C

Form: Free

Example 33

Structure



Crystalline form: White powder

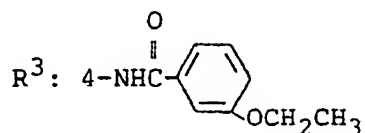
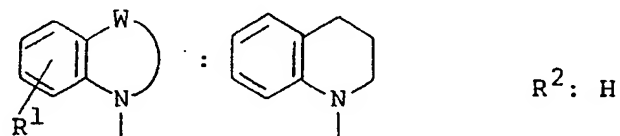
Recrystallization solvent: Methanol

Melting Point: 143 - 144°C

Form: Free

Example 34

Structure



Crystalline form: White powder

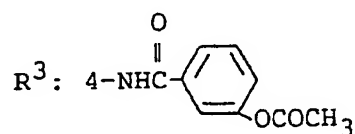
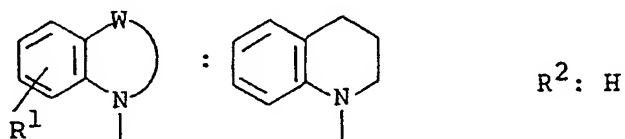
Recrystallization solvent: Methanol

Melting Point: 170.5 - 171.5°C

Form: Free

Example 35

Structure



Crystalline form: White powder

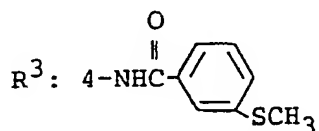
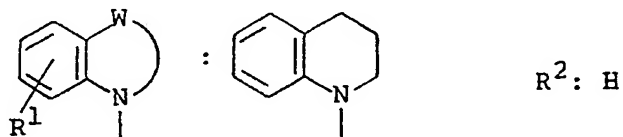
Recrystallization solvent: Methanol

Melting Point: 169.5 - 170.5°C

Form: Free

Example 36

Structure



Crystalline form: White powder

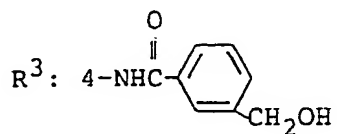
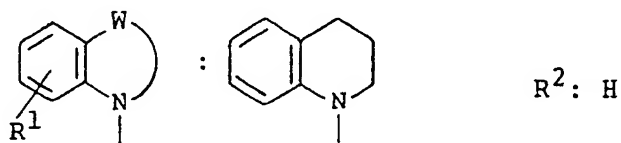
Recrystallization solvent: Methanol

Melting Point: 174.5 - 175.5°C

Form: Free

Example 37

Structure



Crystalline form: White powder

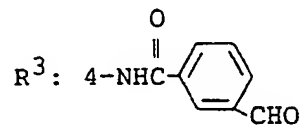
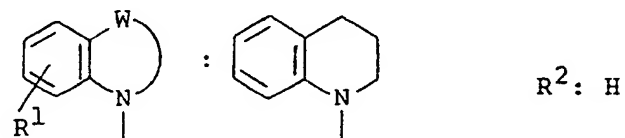
Recrystallization solvent: Methanol

Melting Point: 148.5 - 149.5°C

Form: Free

Example 38

Structure



Crystalline form: White powder

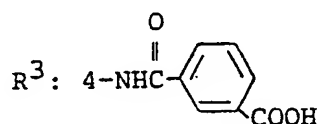
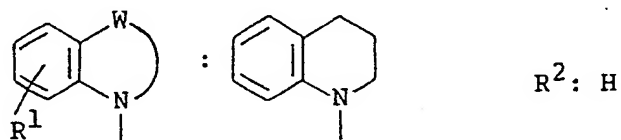
Recrystallization solvent: Methanol

Melting Point: 165 - 166°C

Form: Free

Example 39

Structure



Crystalline form: White powder

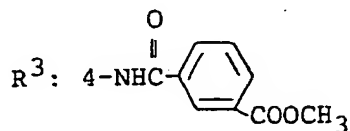
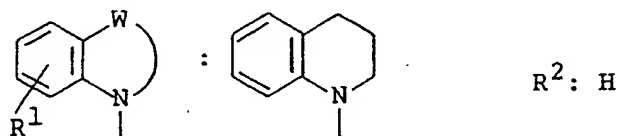
Recrystallization solvent: Methanol

Melting Point: 243 - 244°C

Form: Free

Example 40

Structure



Crystalline form: White powder

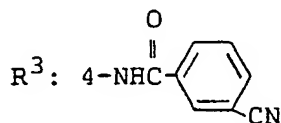
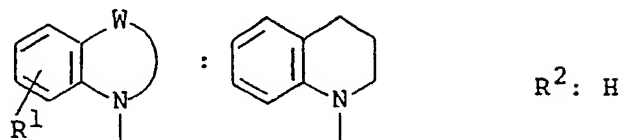
Recrystallization solvent: Methanol

Melting Point: 199 - 200°C

Form: Free

Example 41

Structure



Crystalline form: White powder

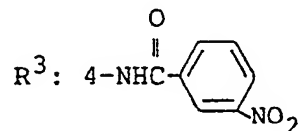
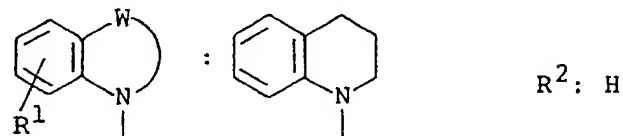
Recrystallization solvent: Methanol

Melting Point: 232.5 - 233.5°C

Form: Free

Example 42

Structure



Crystalline form: White powder

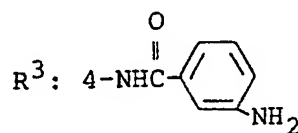
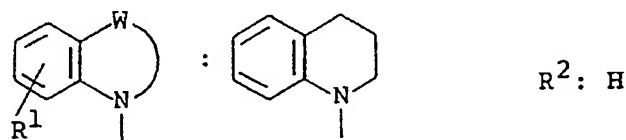
Recrystallization solvent: Methanol

Melting Point: 178.5 - 179.5°C

Form: Free

Example 43

Structure



Crystalline form: White powder

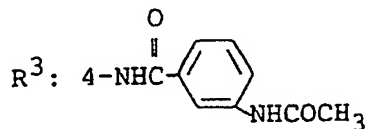
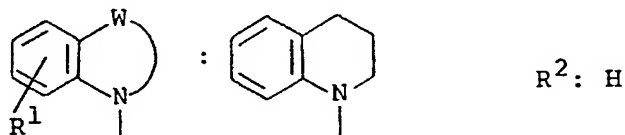
Recrystallization solvent: Methanol

Melting Point: 205.5 - 206.5°C

Form: Free

Example 44

Structure



Crystalline form: White powder

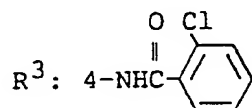
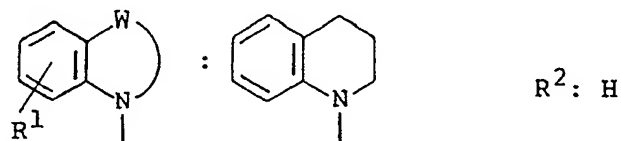
Recrystallization solvent: Methanol

Melting Point: 234 - 235°C

Form: Free

Example 45

Structure



Crystalline form: White powder

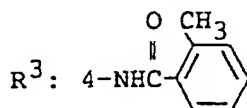
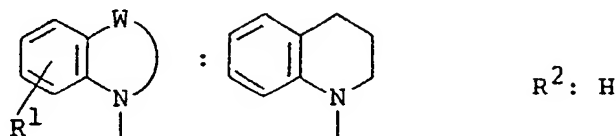
Recrystallization solvent: Methanol

Melting Point: 225 - 226°C

Form: Free

Example 46

Structure



Crystalline form: White powder

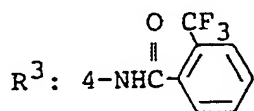
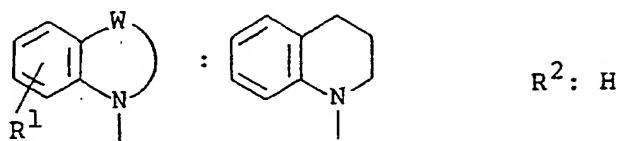
Recrystallization solvent: Methanol

Melting Point: 224 - 225°C

Form: Free

Example 47

Structure



Crystalline form: White powder

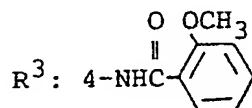
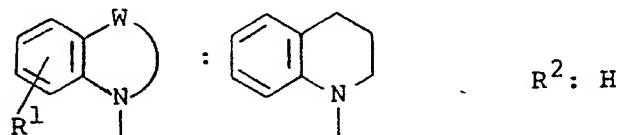
Recrystallization solvent: Methanol

Melting Point: 236 - 237°C

Form: Free

Example 48

Structure



Crystalline form: Yellow powder

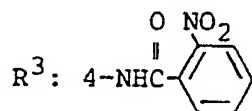
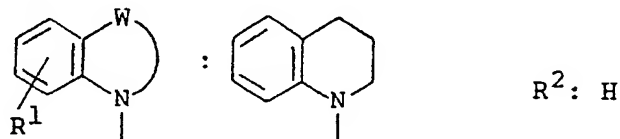
Recrystallization solvent: Methanol

Melting Point: 175.5 - 176.5°C

Form: Free

Example 49

Structure



Crystalline form: White powder

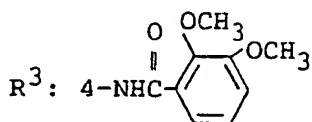
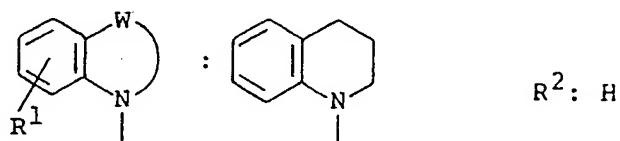
Recrystallization solvent: Methanol

Melting Point: 231 - 232°C

Form: Free

Example 50

Structure



Crystalline form: Yellow powder

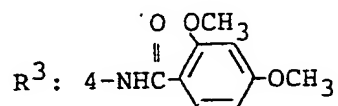
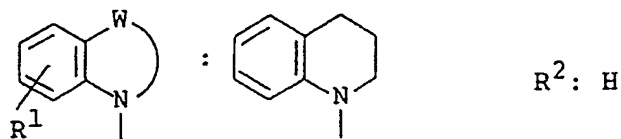
Recrystallization solvent: Methanol

Melting Point: 204 - 205°C

Form: Free

Example 51

Structure



Crystalline form: White powder

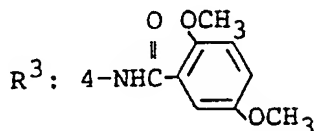
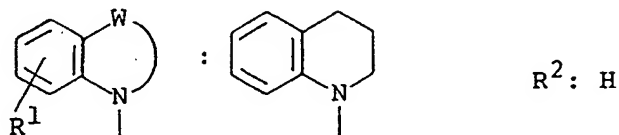
Recrystallization solvent: Methanol

Melting Point: 190 - 191°C

Form: Free

Example 52

Structure



Crystalline form: White powder

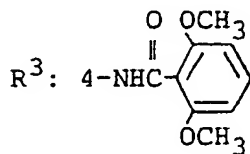
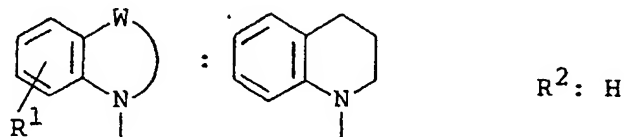
Recrystallization solvent: Methanol

Melting Point: 156 - 157°C

Form: Free

Example 53

Structure



Crystalline form: White powder

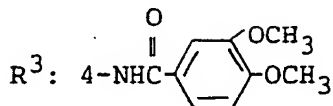
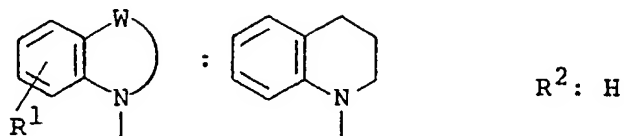
Recrystallization solvent: Methanol

Melting Point: 200 - 201°C

Form: Free

Example 54

Structure



Crystalline form: White powder

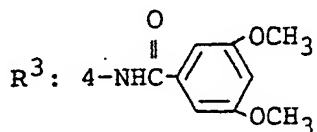
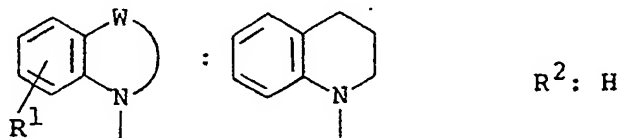
Recrystallization solvent: Methanol

Melting Point: 206 - 207°C

Form: Free

Example 55

Structure



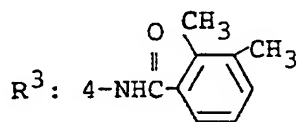
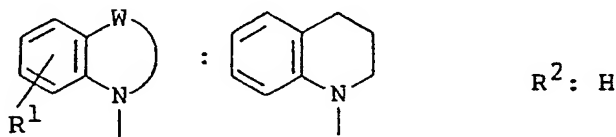
Crystalline form: Colorless amorphous

NMR analysis: 3)

Form: Free

Example 56

Structure



Crystalline form: White powder

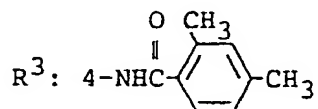
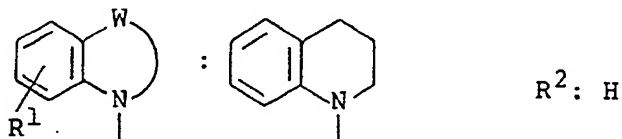
Recrystallization solvent: Methanol

Melting Point: 215.5 - 216.5°C

Form: Free

Example 57

Structure



Crystalline form: White powder

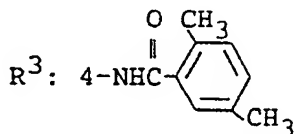
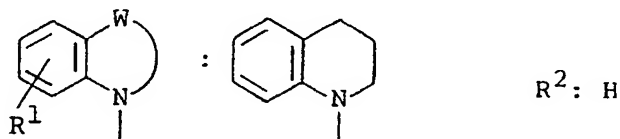
Recrystallization solvent: Methanol

Melting Point: 189 - 190°C

Form: Free

Example 58

Structure



Crystalline form: White powder

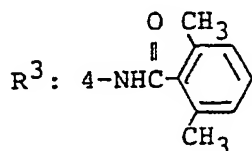
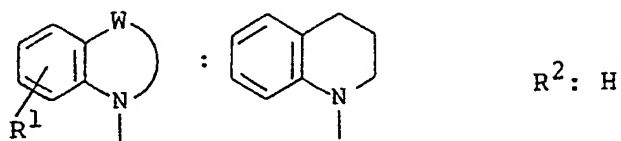
Recrystallization solvent: Methanol

Melting Point: 203.5 - 204.5°C

Form: Free

Example 59

Structure



Crystalline form: Yellow powder

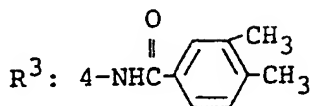
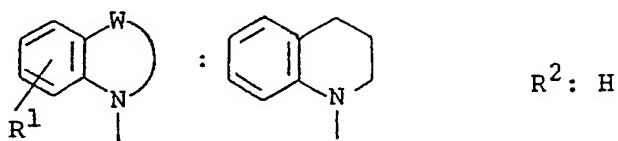
Recrystallization solvent: Methanol

Melting Point: 254.5 - 255.5°C

Form: Free

Example 60

Structure



Crystalline form: Brown powder

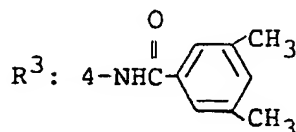
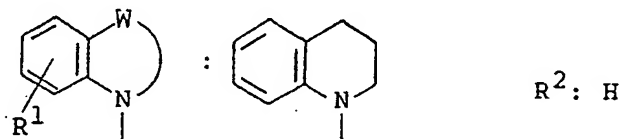
Recrystallization solvent: Methanol

Melting Point: 182.5 - 183.5°C

Form: Free

Example 61

Structure



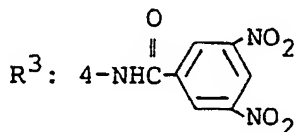
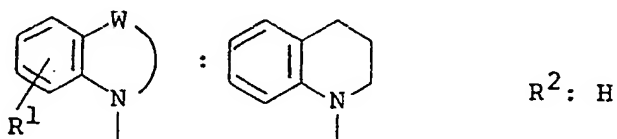
Crystalline form: Colorless amorphous

NMR analysis: 4)

Form: Free

Example 62

Structure



Crystalline form: White powder

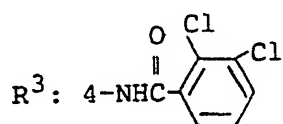
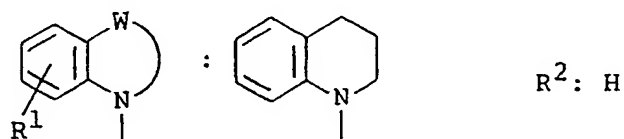
Recrystallization solvent: Methanol

Melting Point: 263 - 264°C

Form: Free

Example 63

Structure



Crystalline form: White powder

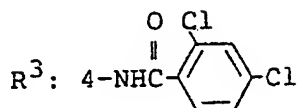
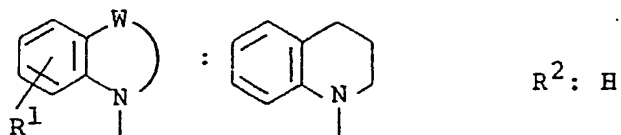
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 217 - 218°C

Form: Free

Example 64

Structure



Crystalline form: White powder

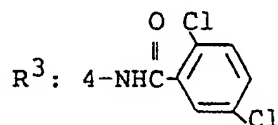
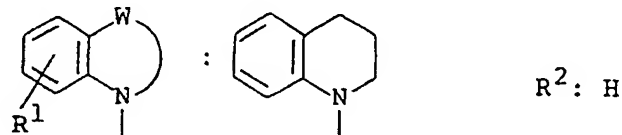
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 183 - 184°C

Form: Free

Example 65

Structure



Crystalline form: Yellow powder

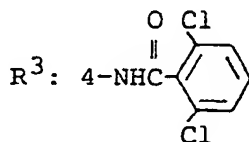
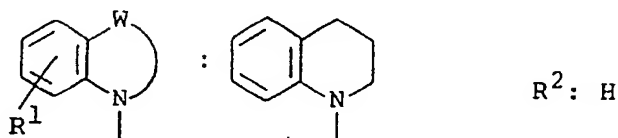
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 207.5 - 208.5°C

Form: Free

Example 66

Structure



Crystalline form: Yellow powder

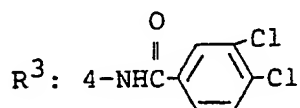
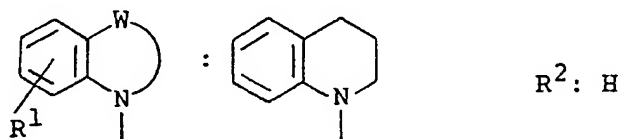
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 251 - 252°C

Form: Free

Example 67

Structure



Crystalline form: White powder

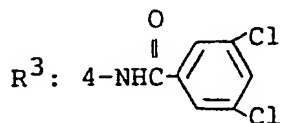
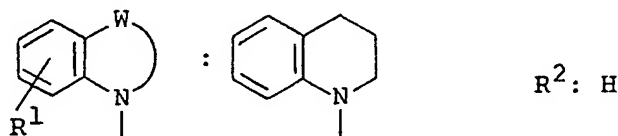
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 208.5 - 209.5°C

Form: Free

Example 68

Structure



Crystalline form: White powder

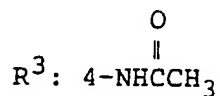
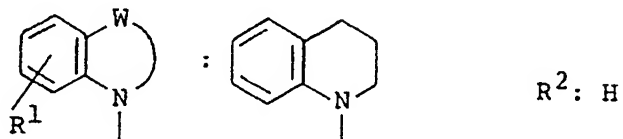
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 231 - 232°C

Form: Free

Example 69

Structure



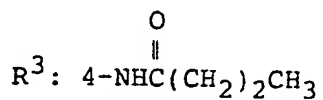
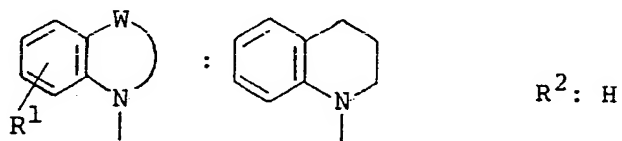
Crystalline form: Colorless amorphous

NMR analysis: 5)

Form: Free

Example 70

Structure



Crystalline form: White powder

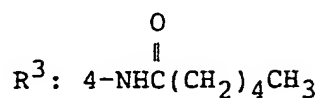
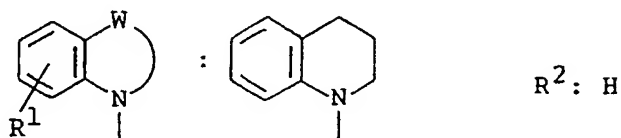
Recrystallization solvent: Methanol

Melting Point: 134 - 135°C

Form: Free

Example 71

Structure



Crystalline form: Yellow powder

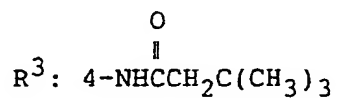
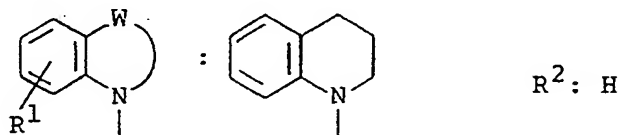
Recrystallization solvent: Methanol

Melting Point: 115 - 116°C

Form: Free

Example 72

Structure



Crystalline form: White powder

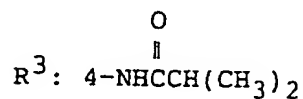
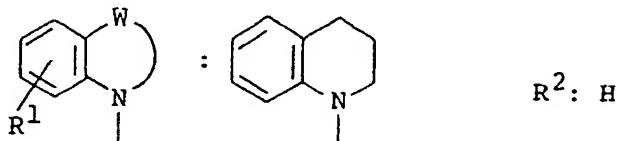
Recrystallization solvent: Methanol

Melting Point: 178.5 - 179.5°C

Form: Free

Example 73

Structure



Crystalline form: White powder

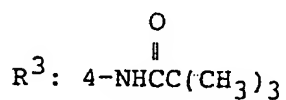
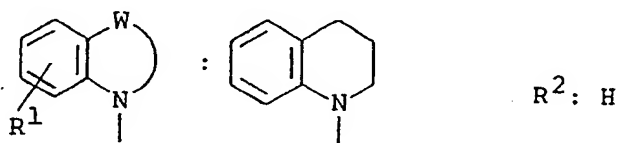
Recrystallization solvent: Methanol

Melting Point: 182.5 - 183.5°C

Form: Free

Example 74

Structure



Crystalline form: White powder

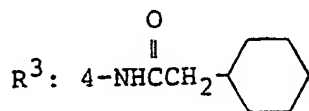
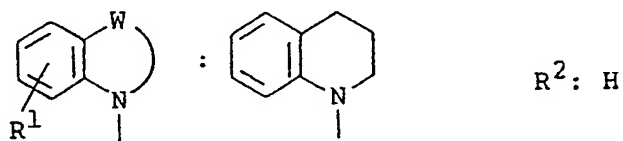
Recrystallization solvent: Methanol

Melting Point: 164 - 165°C

Form: Free

Example 75

Structure



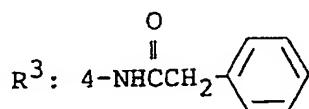
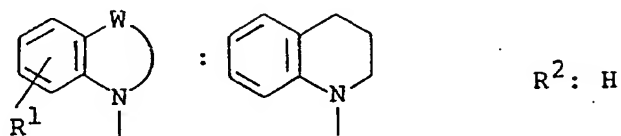
Crystalline form: Colorless amorphous

NMR analysis: 6)

Form: Free

Example 76

Structure



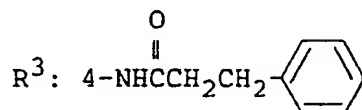
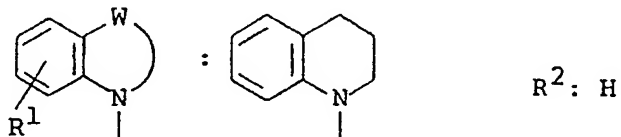
Crystalline form: Yellow amorphous

NMR analysis: 7)

Form: Free

Example 77

Structure



Crystalline form: White powder

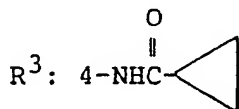
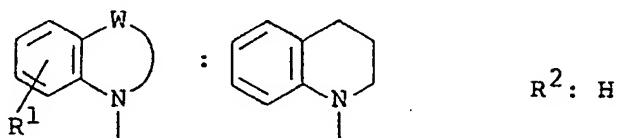
Recrystallization solvent: Methanol

Melting Point: 155 - 156°C

Form: Free

Example 78

Structure



Crystalline form: White powder

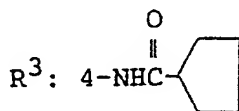
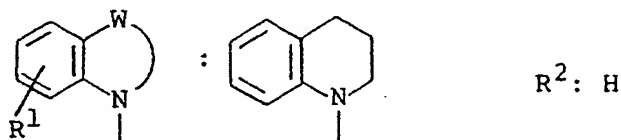
Recrystallization solvent: Methanol

Melting Point: 182.5 - 183.5°C

Form: Free

Example 79

Structure



Crystalline form: White powder

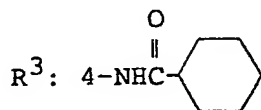
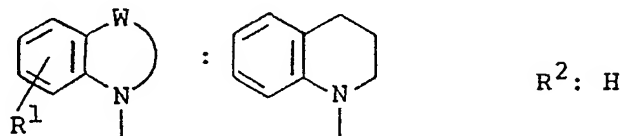
Recrystallization solvent: Methanol

Melting Point: 164.5 - 165.5°C

Form: Free

Example 80

Structure



Crystalline form: White powder

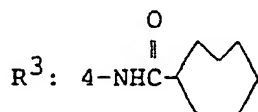
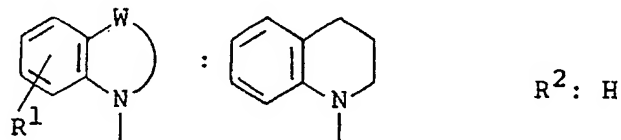
Recrystallization solvent: Methanol

Melting Point: 165 - 167°C

Form: Free

Example 81

Structure



Crystalline form: White powder

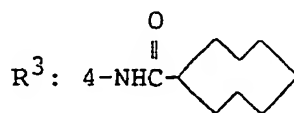
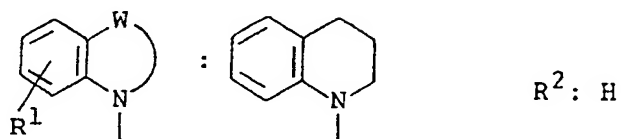
Recrystallization solvent: Methanol

Melting Point: 124 - 125°C

Form: Free

Example 82

Structure



Crystalline form: White powder

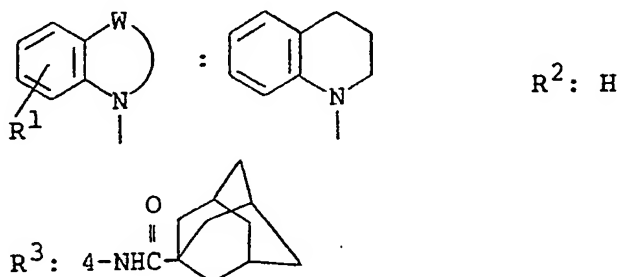
Recrystallization solvent: Methanol

Melting Point: 140.5 - 141.5°C

Form: Free

Example 83

Structure



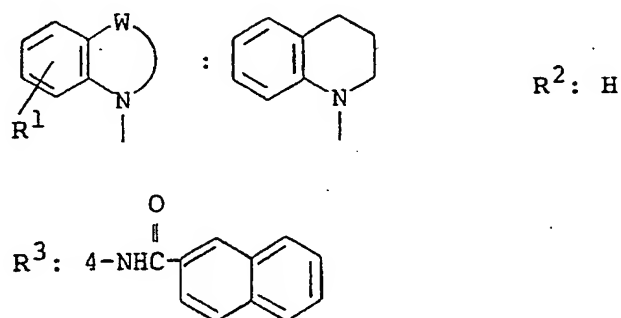
Crystalline form: Colorless amorphous

NMR analysis: 8)

Form: Free

Example 84

Structure



Crystalline form: White powder

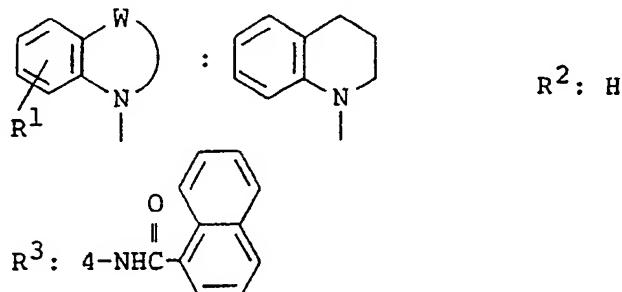
Recrystallization solvent: Methanol

Melting Point: 211 - 212°C

Form: Free

Example 85

Structure



Crystalline form: White powder

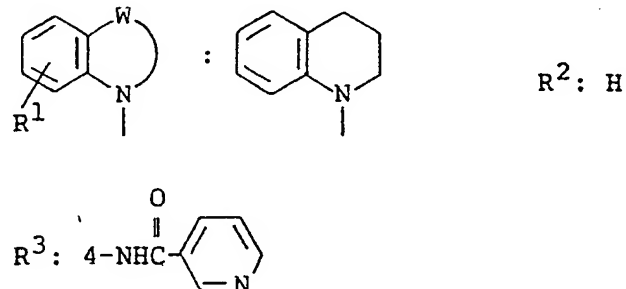
Recrystallization solvent: Methanol

Melting Point: 178 - 179°C

Form: Free

Example 86

Structure



Crystalline form: White powder

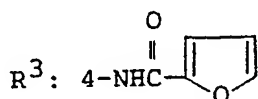
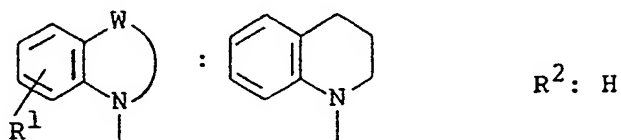
Recrystallization solvent: Methanol

Melting Point: 212.5 - 213.5°C

Form: Free

Example 87

Structure



Crystalline form: White powder

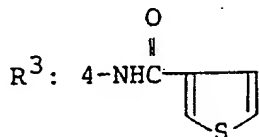
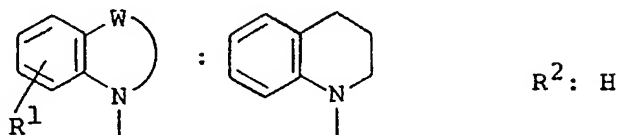
Recrystallization solvent: Methanol

Melting Point: 193 - 194°C

Form: Free

Example 88

Structure



Crystalline form: White powder

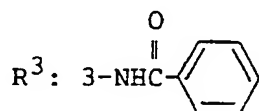
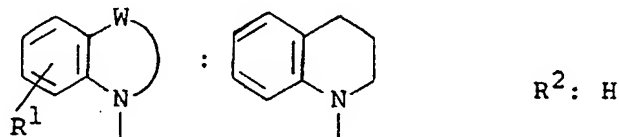
Recrystallization solvent: Methanol

Melting Point: 203 - 204°C

Form: Free

Example 89

Structure



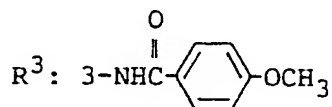
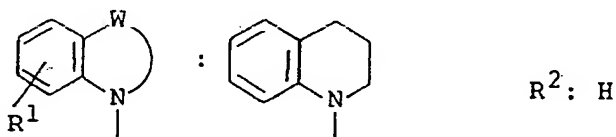
Crystalline form: Colorless amorphous

NMR analysis: 9)

Form: Free

Example 90

Structure



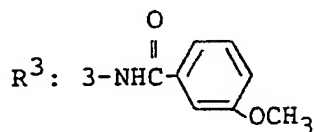
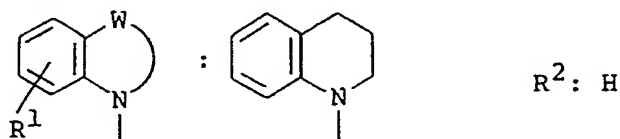
Crystalline form: Colorless amorphous

NMR analysis: 10)

Form: Free

Example 91

Structure



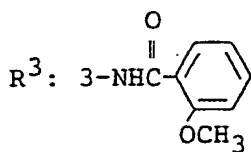
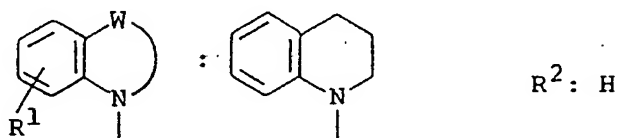
Crystalline form: Colorless amorphous

NMR analysis: 11)

Form: Free

Example 92

Structure



Crystalline form: White powder

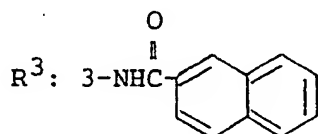
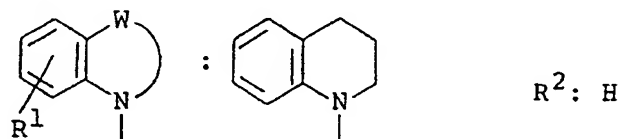
Recrystallization solvent: Methanol

Melting Point: 156.5 - 157.5°C

Form: Free

Example 93

Structure



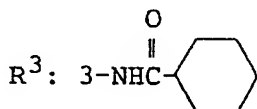
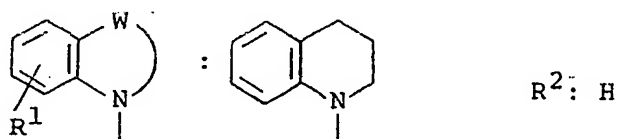
Crystalline form: Colorless amorphous

NMR analysis: 12)

Form: Free

Example 94

Structure



Crystalline form: White powder

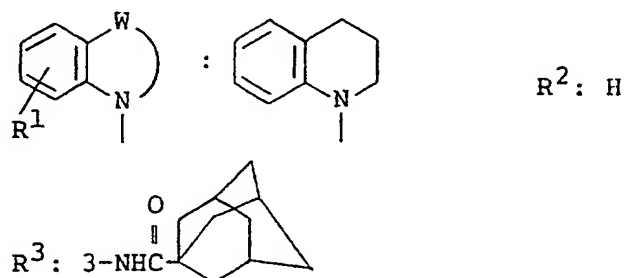
Recrystallization solvent: Methanol

Melting Point: 203.5 - 204.5°C

Form: Free

Example 95

Structure



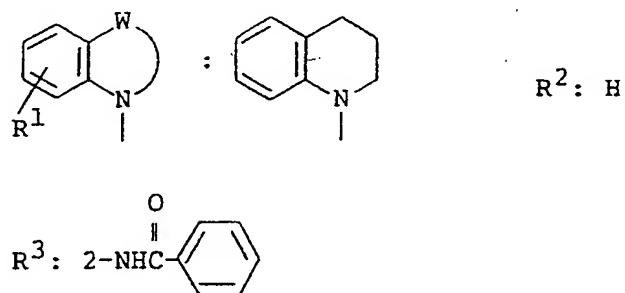
Crystalline form: Colorless amorphous

NMR analysis: 13)

Form: Free

Example 96

Structure



Crystalline form: Yellow powder

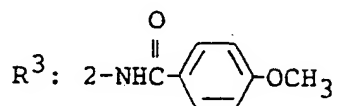
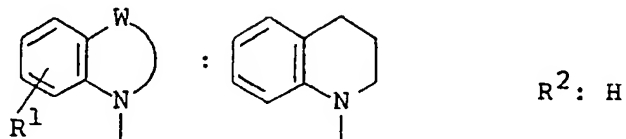
Recrystallization solvent: Methanol

Melting Point: 126 - 127°C

Form: Free

Example 97

Structure



Crystalline form: White powder

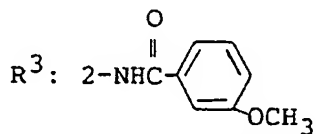
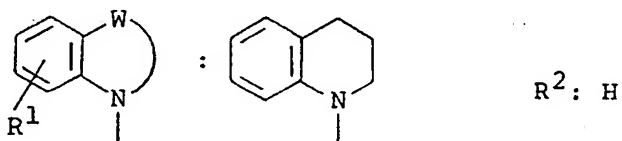
Recrystallization solvent: Methanol

Melting Point: 158.5 - 159.5°C

Form: Free

Example 98

Structure



Crystalline form: White powder

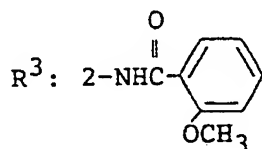
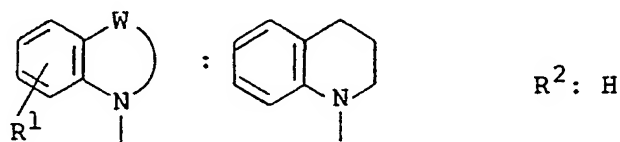
Recrystallization solvent: Methanol

Melting Point: 129 - 130°C

Form: Free

Example 99

Structure



Crystalline form: White powder

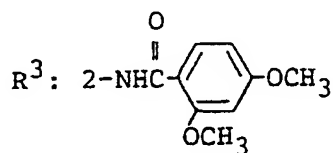
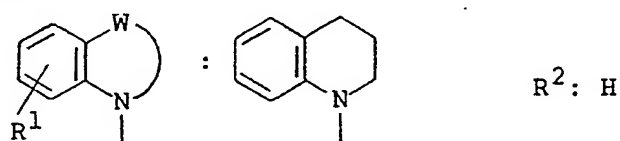
Recrystallization solvent: Methanol

Melting Point: 131.5 - 132.5°C

Form: Free

Example 100

Structure



Crystalline form: White powder

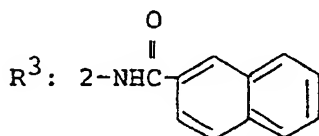
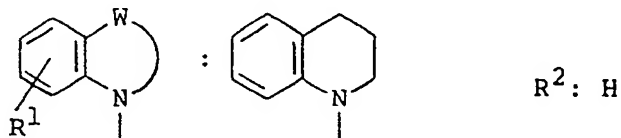
Recrystallization solvent: Methanol

Melting Point: 140 - 141°C

Form: Free

Example 101

Structure



Crystalline form: White powder

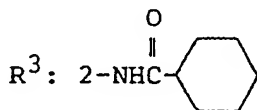
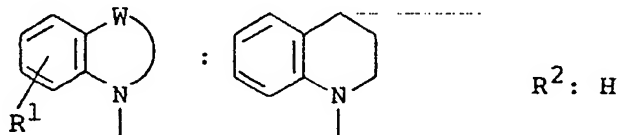
Recrystallization solvent: Methanol

Melting Point: 138.5 - 139.5°C

Form: Free

Example 102

Structure



Crystalline form: White powder

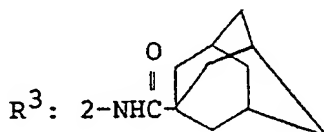
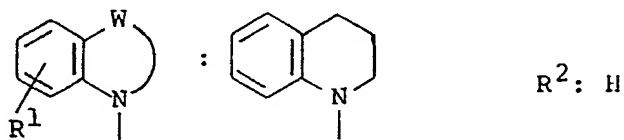
Recrystallization solvent: Methanol

Melting Point: 128 - 129°C

Form: Free

Example 103

Structure



Crystalline form: White powder

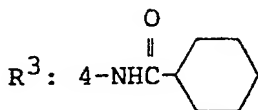
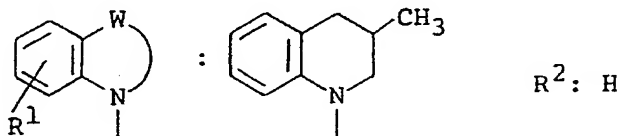
Recrystallization solvent: Methanol

Melting Point: 160 - 161°C

Form: Free

Example 104

Structure



Crystalline form: White powder

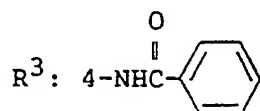
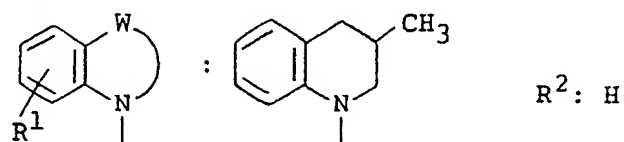
Recrystallization solvent: Methanol

Melting Point: 175 - 176°C

Form: Free

Example 105

Structure



Crystalline form: White powder

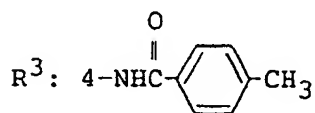
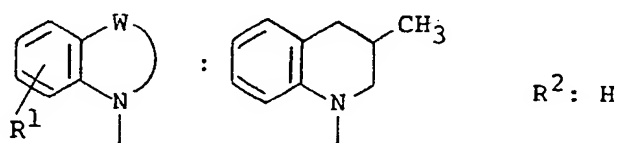
Recrystallization solvent: Methanol

Melting Point: 197 - 198°C

Form: Free

Example 106

Structure



Crystalline form: White powder

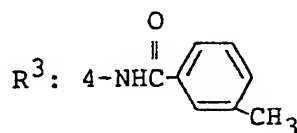
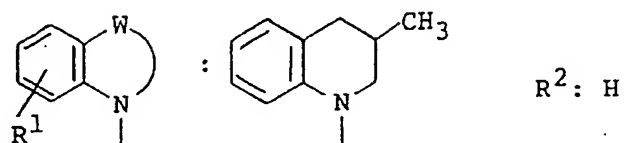
Recrystallization solvent: Methanol

Melting Point: 204 - 205°C

Form: Free

Example 107

Structure



Crystalline form: White powder

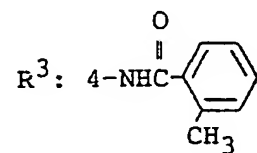
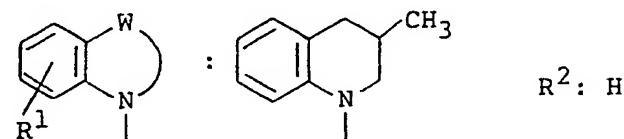
Recrystallization solvent: Methanol

Melting Point: 174 - 175°C

Form: Free

Example 108

Structure



Crystalline form: Yellow powder

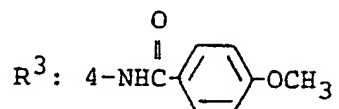
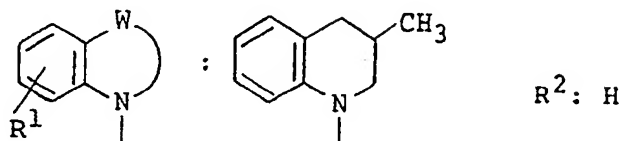
Recrystallization solvent: Methanol

Melting Point: 202 - 203°C

Form: Free

Example 109

Structure



Crystalline form: White powder

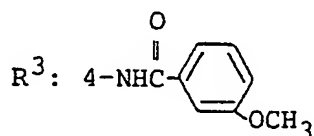
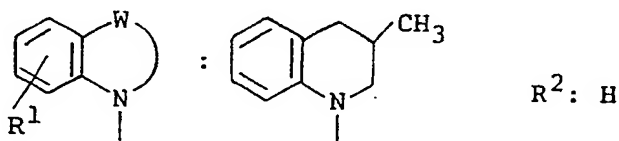
Recrystallization solvent: Methanol

Melting Point: 203 - 204°C

Form: Free

Example 110

Structure



Crystalline form: White powder

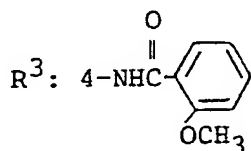
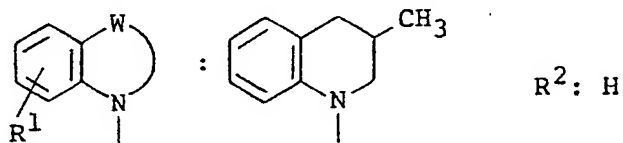
Recrystallization solvent: Methanol

Melting Point: 170.5 - 171.5°C

Form: Free

Example 111

Structure



Crystalline form: White powder

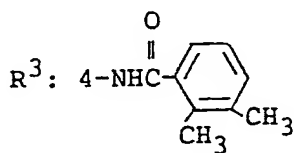
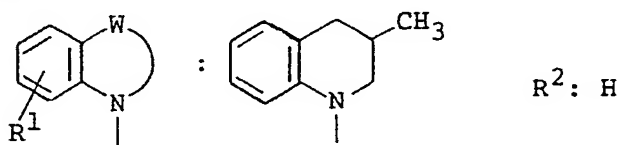
Recrystallization solvent: Methanol

Melting Point: 149 - 150°C

Form: Free

Example 112

Structure



Crystalline form: White powder

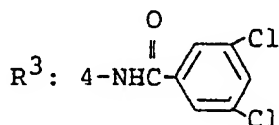
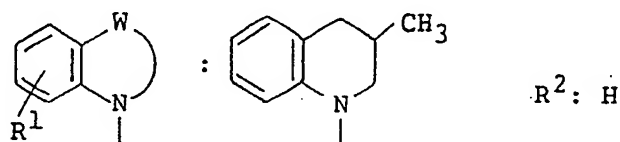
Recrystallization solvent: Methanol

Melting Point: 185 - 186°C

Form: Free

Example 113

Structure



Crystalline form: White powder

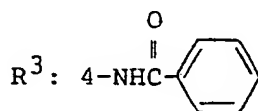
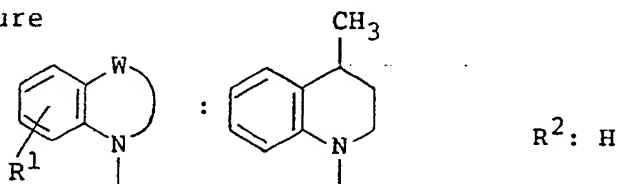
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 225 - 226°C

Form: Free

Example 114

Structure



Crystalline form: White powder

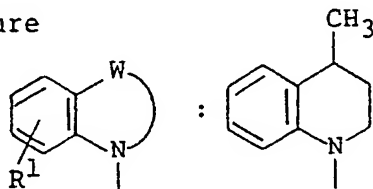
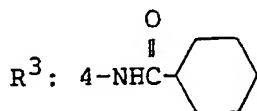
Recrystallization solvent: Methanol

Melting Point: 234 - 235°C

Form: Free

Example 115

Structure

R²: H

Crystalline form: White powder

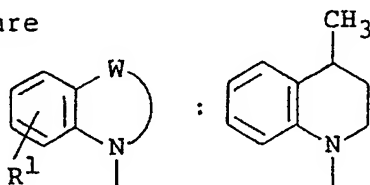
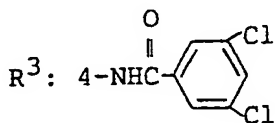
Recrystallization solvent: Methanol

Melting Point: 149.5 - 150.5°C

Form: Free

Example 116

Structure

R²: H

Crystalline form: White powder

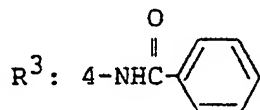
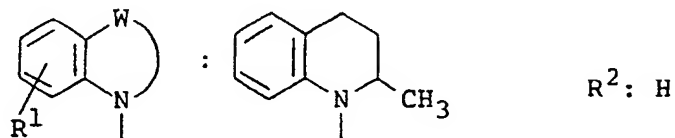
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 197 - 198°C

Form: Free

Example 117

Structure



Crystalline form: White powder

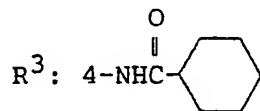
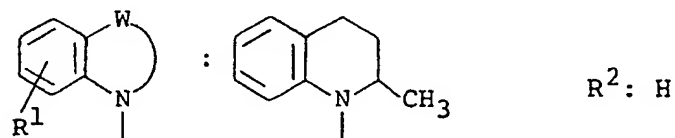
Recrystallization solvent: Methanol

Melting Point: 204 - 205°C

Form: Free

Example 118

Structure



Crystalline form: White powder

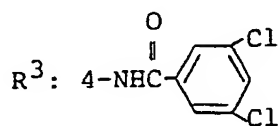
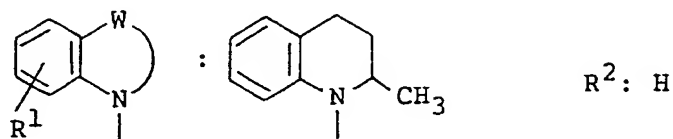
Recrystallization solvent: Methanol

Melting Point: 224.5 - 225.5°C

Form: Free

Example 119

Structure



Crystalline form: White powder

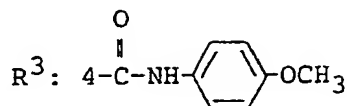
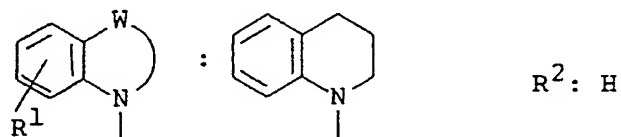
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 189.5 - 190.5°C

Form: Free

Example 120

Structure



Crystalline form: White powder

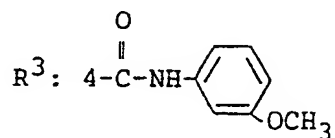
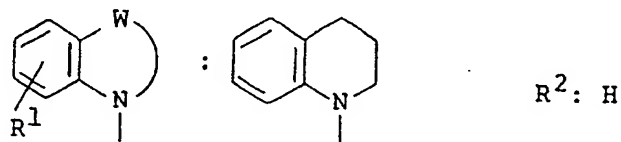
Recrystallization solvent: Methanol

Melting Point: 221.5 - 222.5°C

Form: Free

Example 121

Structure



Crystalline form: Colorless needles

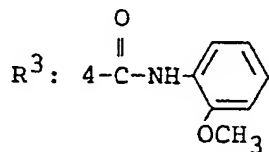
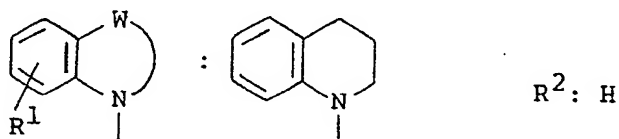
Recrystallization solvent: Methanol

Melting Point: 154 - 155°C

Form: Free

Example 122

Structure



Crystalline form: White powder

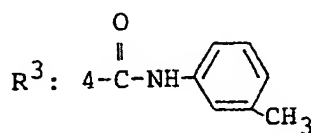
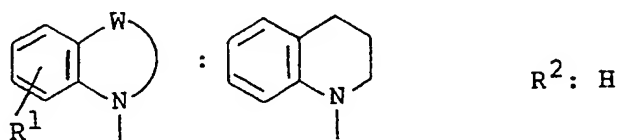
Recrystallization solvent: Methanol

Melting Point: 165 - 166°C

Form: Free

Example 123

Structure



Crystalline form: Colorless needles

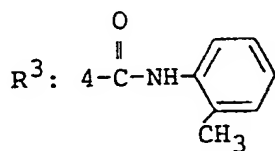
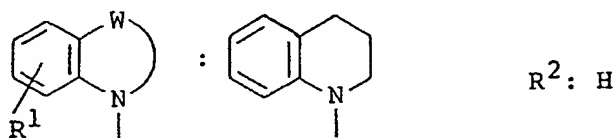
Recrystallization solvent: Methanol

Melting Point: 141 - 142°C

Form: Free

Example 124

Structure



Crystalline form: White powder

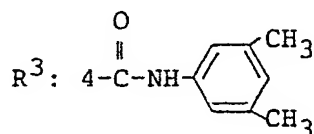
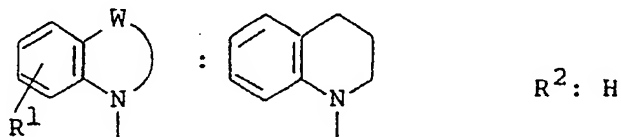
Recrystallization solvent: Methanol

Melting Point: 165.5 - 166.5°C

Form: Free

Example 125

Structure



Crystalline form: Colorless needles

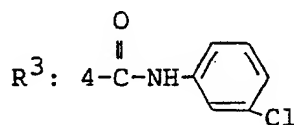
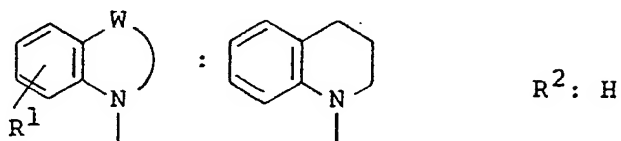
Recrystallization solvent: Methanol

Melting Point: 164 - 165°C

Form: Free

Example 126

Structure



Crystalline form: White powder

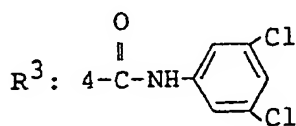
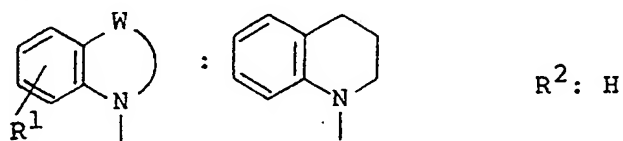
Recrystallization solvent: Methanol

Melting Point: 203.5 - 204.5°C

Form: Free

Example 127

Structure



Crystalline form: White powder

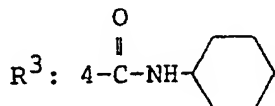
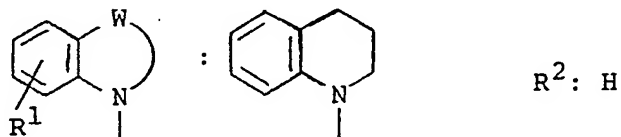
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 236.5 - 237.5°C

Form: Free

Example 128

Structure



Crystalline form: White powder

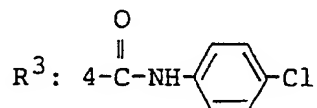
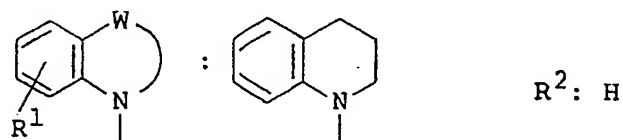
Recrystallization solvent: Methanol

Melting Point: 206.5 - 207.5°C

Form: Free

Example 129

Structure



Crystalline form: White powder

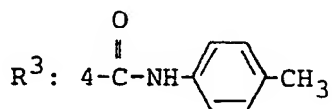
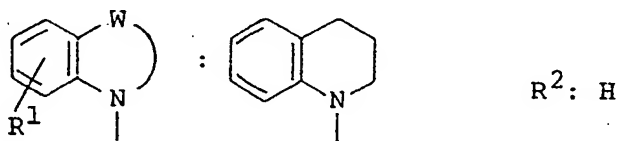
Recrystallization solvent: Methanol

Melting Point: 271 - 272°C

Form: Free

Example 130

Structure



Crystalline form: White powder

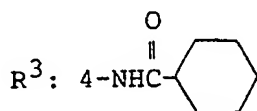
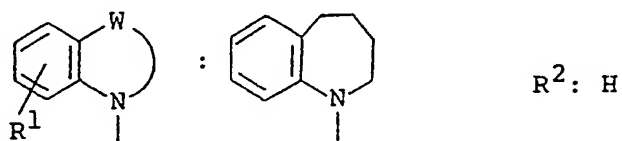
Recrystallization solvent: Methanol

Melting Point: 246 - 247°C

Form: Free

Example 131

Structure



Crystalline form: White powder

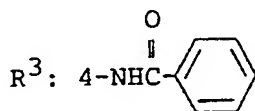
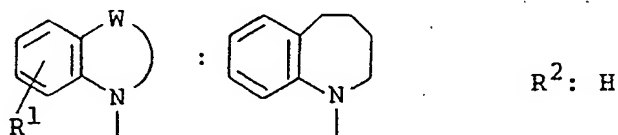
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 210 - 211°C

Form: Free

Example 132

Structure



Crystalline form: White powder

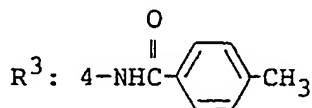
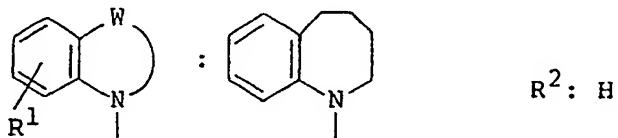
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 230.5 - 231.5°C

Form: Free

Example 133

Structure



Crystalline form: White powder

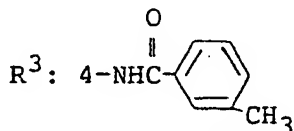
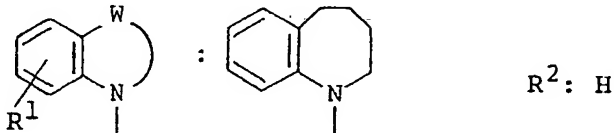
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 203 - 204°C

Form: Free

Example 134

Structure



Crystalline form: White powder

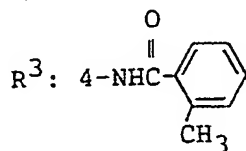
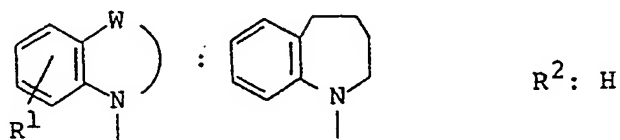
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 170 - 171°C

Form: Free

Example 135

Structure



Crystalline form: White powder

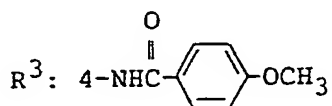
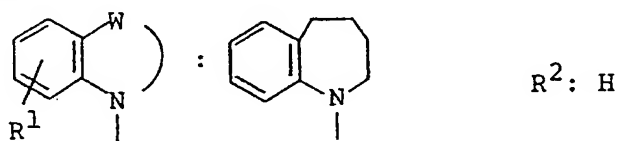
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 225.5 - 226.5°C

Form: Free

Example 136

Structure



Crystalline form: White powder

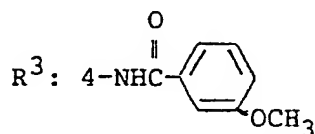
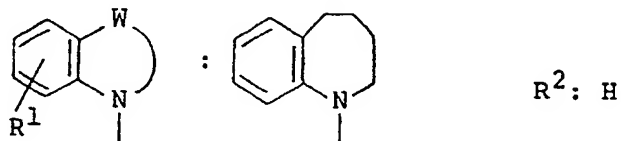
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 210.5 - 211.5°C

Form: Free

Example 137

Structure



Crystalline form: White powder

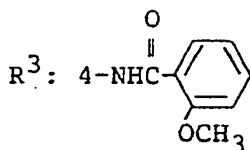
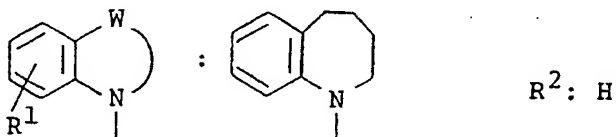
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 183 - 184°C

Form: Free

Example 138

Structure



Crystalline form: White powder

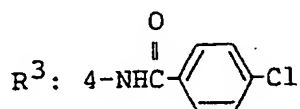
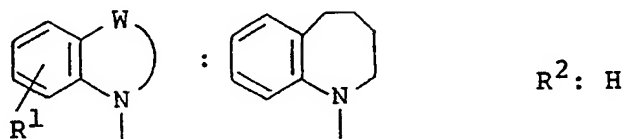
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 191.5 - 192.5°C

Form: Free

Example 139

Structure



Crystalline form: White powder

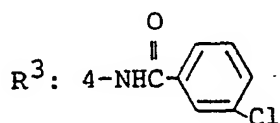
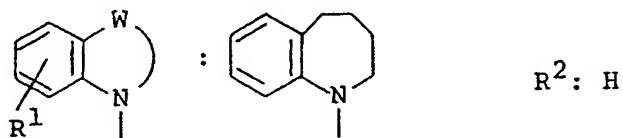
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 203.5 - 204.5°C

Form: Free

Example 140

Structure



Crystalline form: White powder

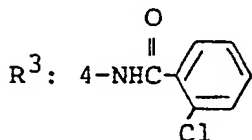
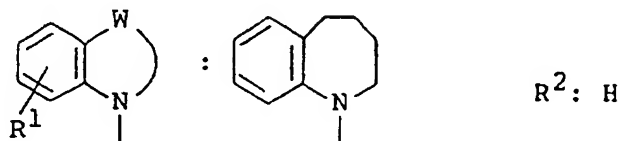
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 215.5 - 216.5°C

Form: Free

Example 141

Structure



Crystalline form: White powder

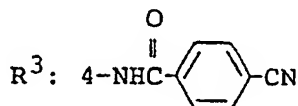
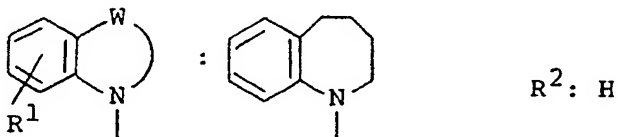
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 211.5 - 212.5°C

Form: Free

Example 142

Structure



Crystalline form: White powder

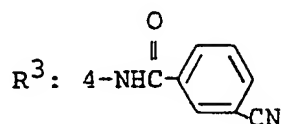
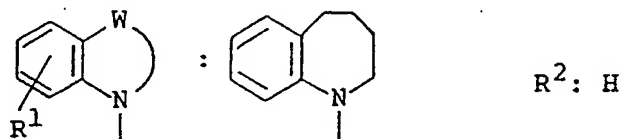
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 280.5 - 281.5°C

Form: Free

Example 143

Structure



Crystalline form: White powder

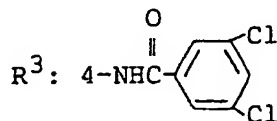
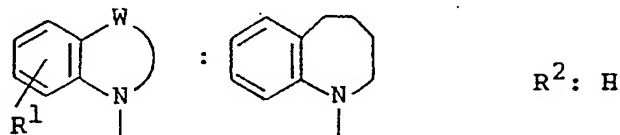
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 235.5 - 236.5°C

Form: Free

Example 144

Structure



Crystalline form: White powder

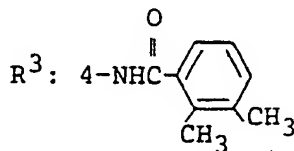
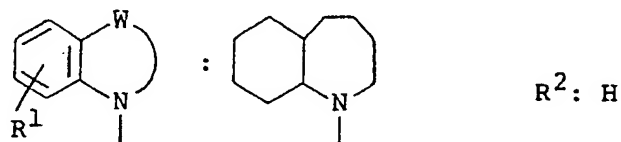
Recrystallization solvent: Ethanol/dichloromethane

Melting Point: 249.5 - 250.5°C

Form: Free

Example 145

Structure



Crystalline form: White powder

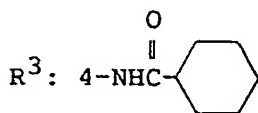
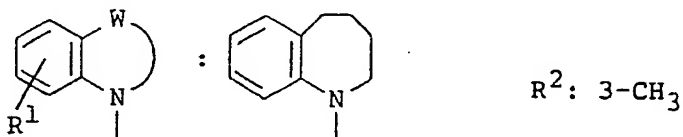
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 217 - 218°C

Form: Free

Example 146

Structure



Crystalline form: White powder

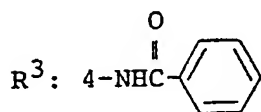
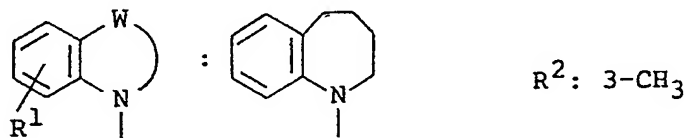
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 201.5 - 203°C

Form: Free

Example 147

Structure



Crystalline form: White powder

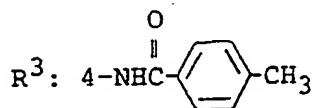
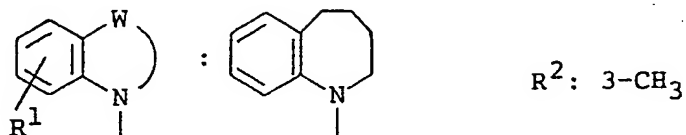
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 221 - 222°C

Form: Free

Example 148

Structure



Crystalline form: White powder

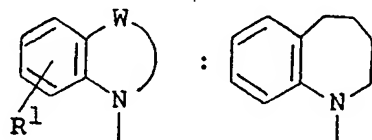
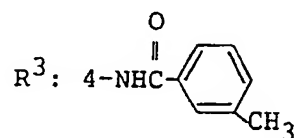
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 193 - 194°C

Form: Free

Example 149

Structure

 $R^2: 3\text{-CH}_3$ 

Crystalline form: White powder

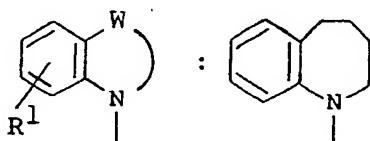
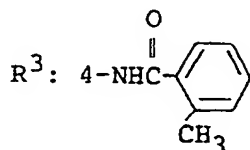
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 176 - 177°C

Form: Free

Example 150

Structure

 $R^2: 3\text{-CH}_3$ 

Crystalline form: White powder

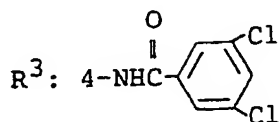
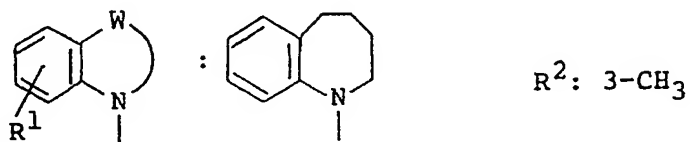
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 188 - 189.5°C

Form: Free

Example 151

Structure



Crystalline form: White powder

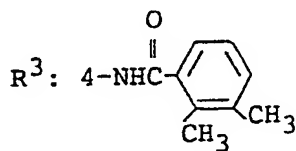
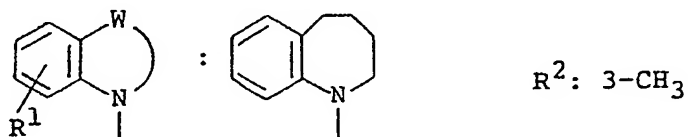
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 227 - 228°C

Form: Free

Example 152

Structure



Crystalline form: White powder

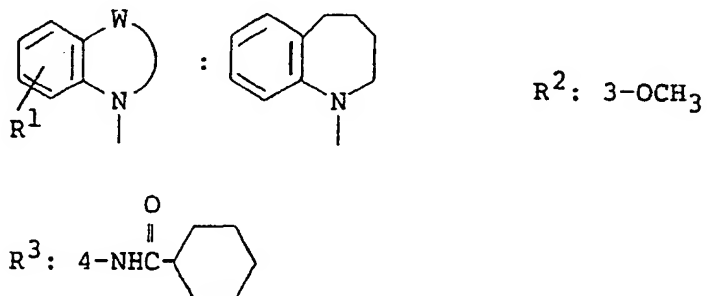
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 186 - 187°C

Form: Free

Example 153

Structure



Crystalline form: White powder

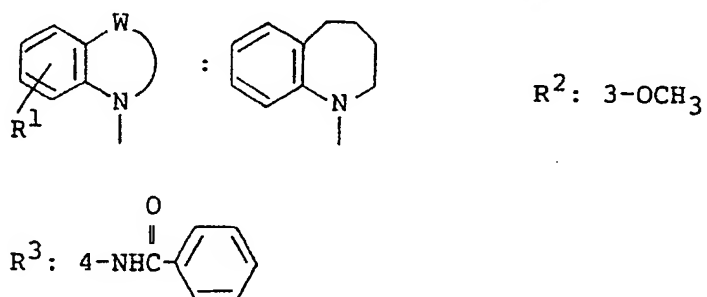
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 135 - 136°C

Form: Free

Example 154

Structure



Crystalline form: White powder

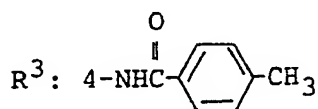
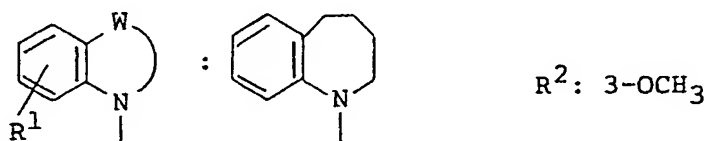
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 173 - 174°C

Form: Free

Example 155

Structure



Crystalline form: White powder

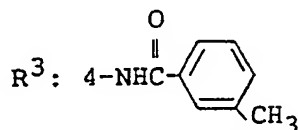
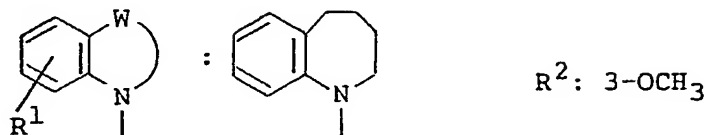
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 174.5 - 175.5°C

Form: Free

Example 156

Structure



Crystalline form: White powder

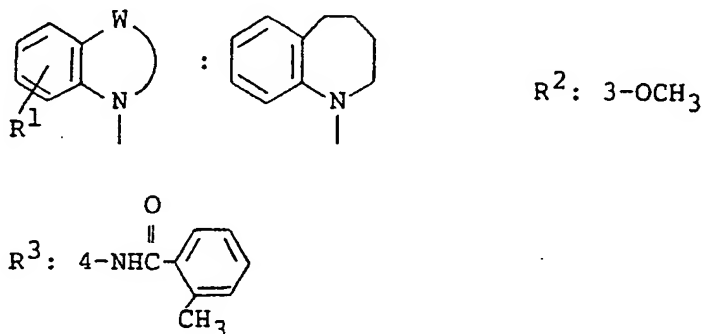
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 156 - 157°C

Form: Free

Example 157

Structure



Crystalline form: White powder

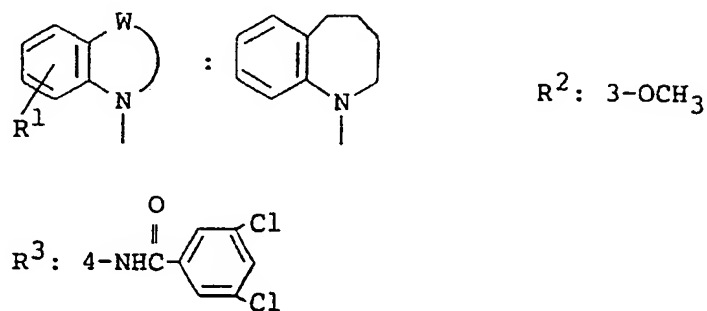
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 153 - 154°C

Form: Free

Example 158

Structure



Crystalline form: White powder

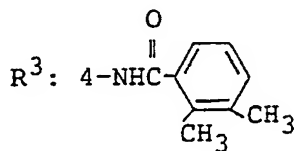
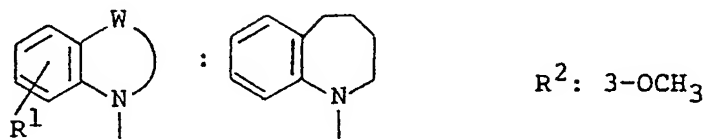
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 169 - 170°C

Form: Free

Example 159

Structure



Crystalline form: White powder

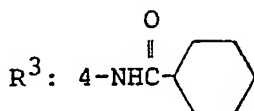
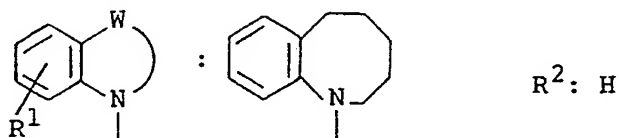
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 185 - 186°C

Form: Free

Example 160

Structure



Crystalline form: White powder

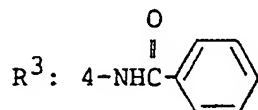
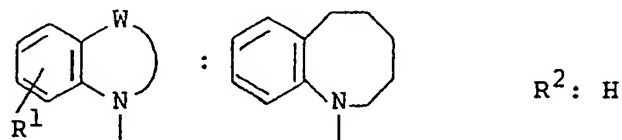
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 213 - 214°C

Form: Free

Example 161

Structure



Crystalline form: White powder

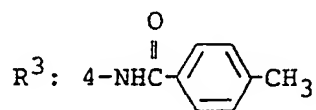
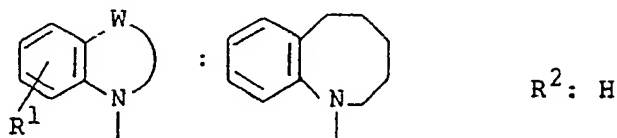
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 240 - 241°C

Form: Free

Example 162

Structure



Crystalline form: White powder

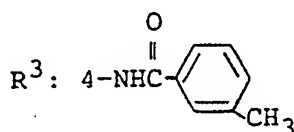
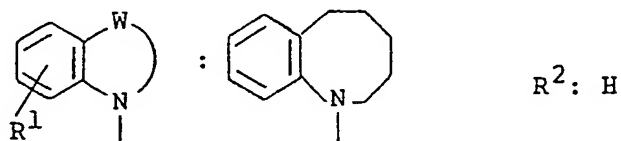
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 225 - 226°C

Form: Free

Example 163

Structure



Crystalline form: White powder

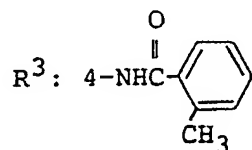
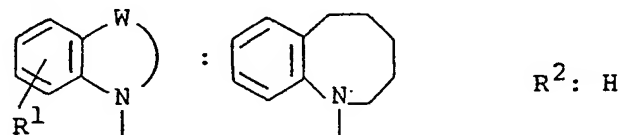
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 209.5 - 210.5°C

Form: Free

Example 164

Structure



Crystalline form: White powder

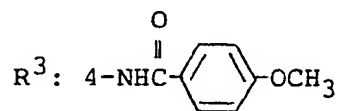
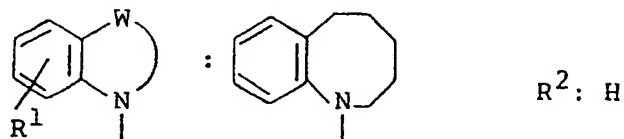
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 198 - 199°C

Form: Free

Example 165

Structure



Crystalline form: White powder

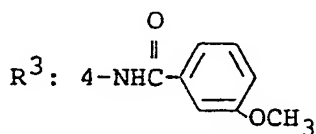
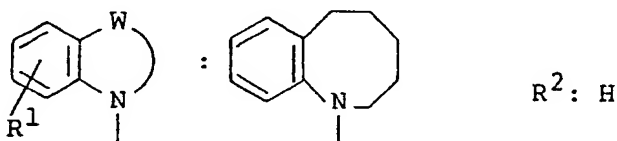
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 214.5 - 215.5°C

Form: Free

Example 166

Structure



Crystalline form: White powder

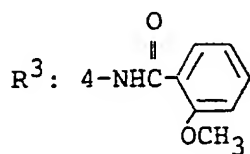
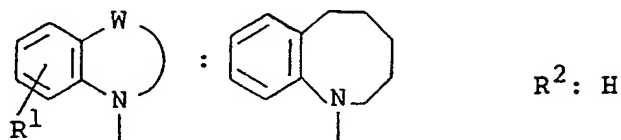
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 196.5 - 197.5°C

Form: Free

Example 167

Structure



Crystalline form: White powder

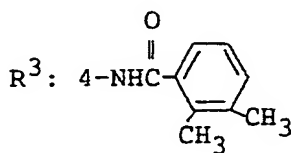
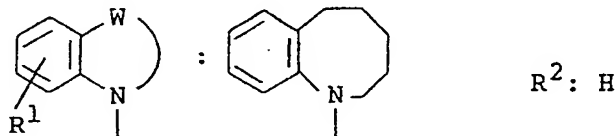
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 194 - 195°C

Form: Free

Example 168

Structure



Crystalline form: White powder

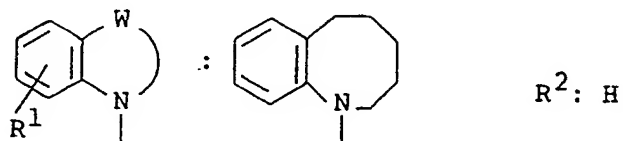
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 191 - 192°C

Form: Free

Example 169

Structure



Crystalline form: White powder

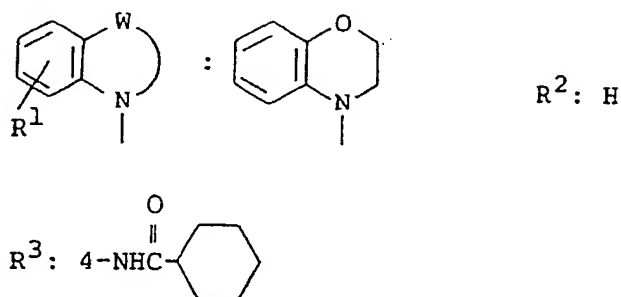
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 227 - 228°C

Form: Free

Example 170

Structure



Crystalline form: White powder

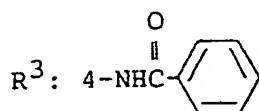
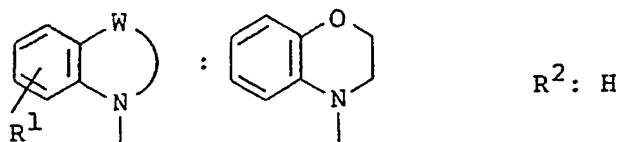
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 182 - 183°C

Form: Free

Example 171

Structure



Crystalline form: White powder

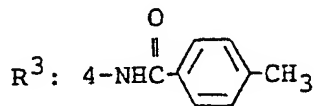
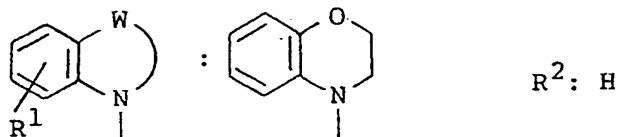
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 222 - 223°C

Form: Free

Example 172

Structure



Crystalline form: White powder

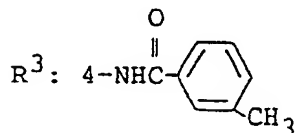
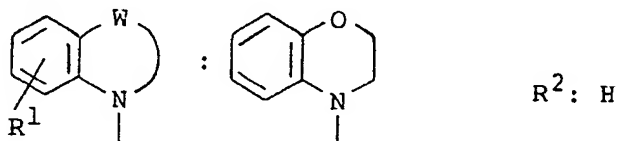
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 204 - 205°C

Form: Free

Example 173

Structure



Crystalline form: White powder

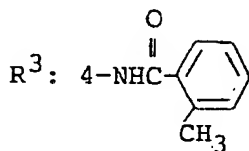
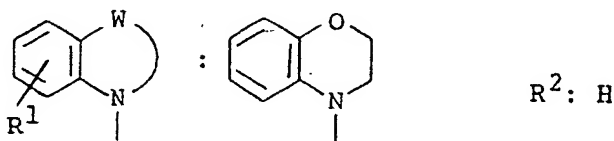
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 194 - 195°C

Form: Free

Example 174

Structure



Crystalline form: White powder

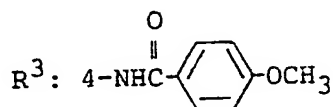
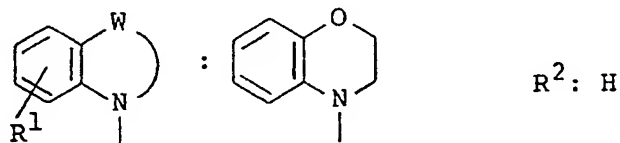
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 213 - 214°C

Form: Free

Example 175

Structure



Crystalline form: White powder

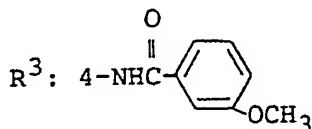
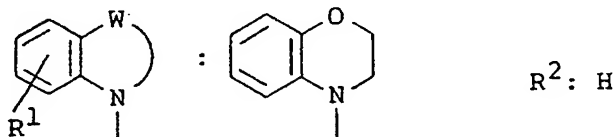
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 201 - 202°C

Form: Free

Example 176

Structure



Crystalline form: Colorless needles

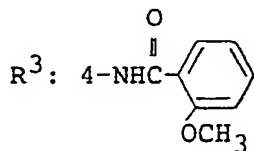
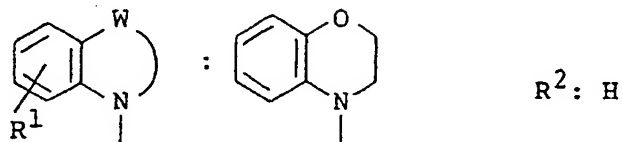
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 173 - 174°C

Form: Free

Example 177

Structure



Crystalline form: White powder

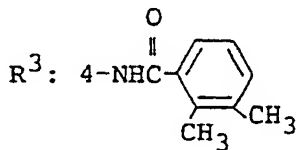
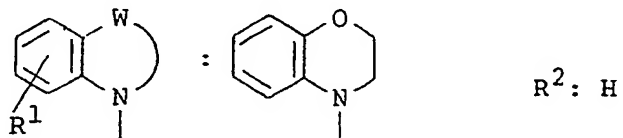
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 150.5 - 151.5°C

Form: Free

Example 178

Structure



Crystalline form: White powder

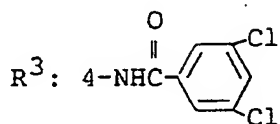
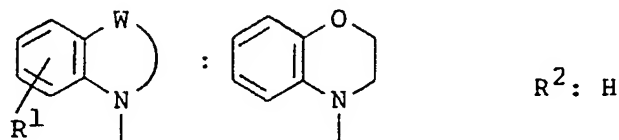
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 207.5 - 208.5°C

Form: Free

Example 179

Structure



Crystalline form: White powder

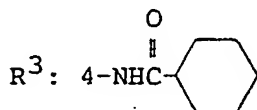
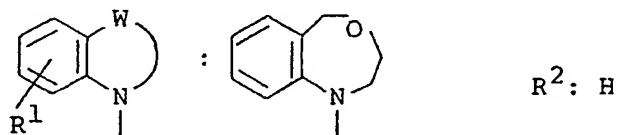
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 256.5 - 257.5°C

Form: Free

Example 180

Structure



Crystalline form: White powder

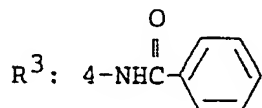
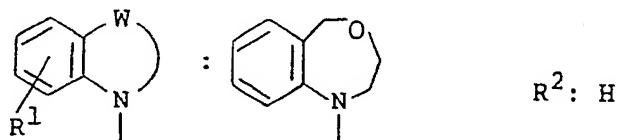
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 199.5 - 200.5°C

Form: Free

Example 181

Structure



Crystalline form: White powder

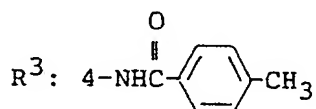
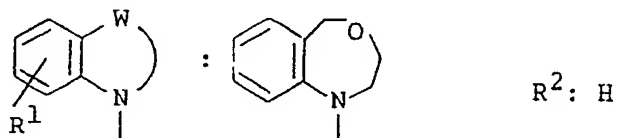
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 211 - 212°C

Form: Free

Example 182

Structure



Crystalline form: White powder

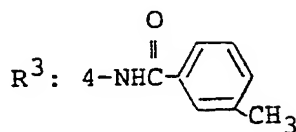
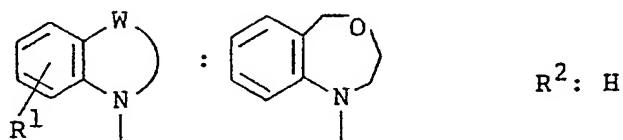
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 189.5 - 190.5°C

Form: Free

Example 183

Structure



Crystalline form: White powder

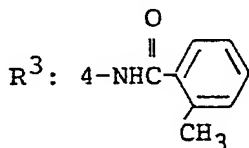
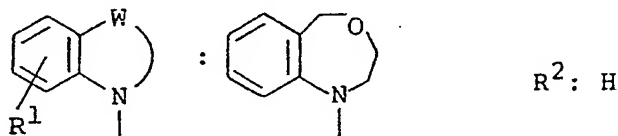
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 176.5 - 177.5°C

Form: Free

Example 184

Structure



Crystalline form: Yellow powder

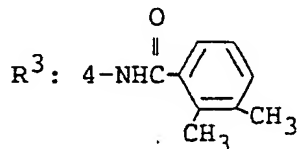
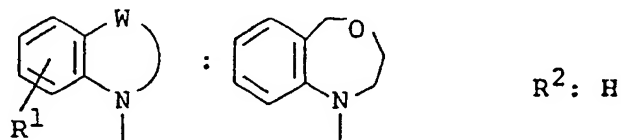
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 202 - 203°C

Form: Free

Example 185

Structure



Crystalline form: White powder

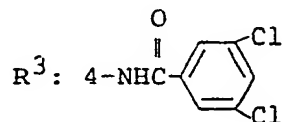
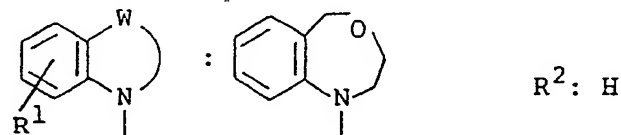
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 219 - 220°C

Form: Free

Example 186

Structure



Crystalline form: White powder

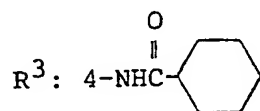
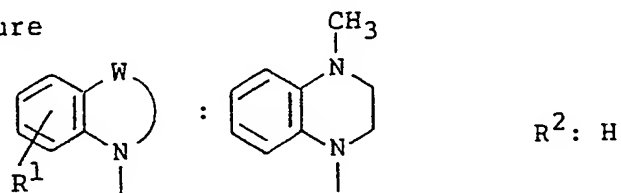
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 272 - 273°C

Form: Free

Example 187

Structure



Crystalline form: Yellow powder

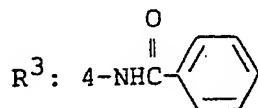
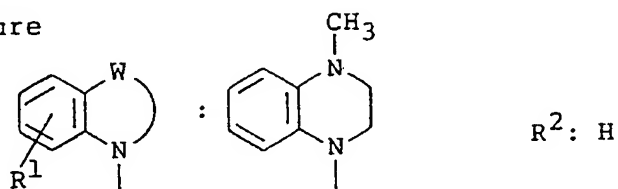
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 146 - 147°C

Form: Free

Example 188

Structure



Crystalline form: Yellow powder

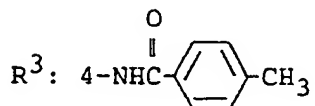
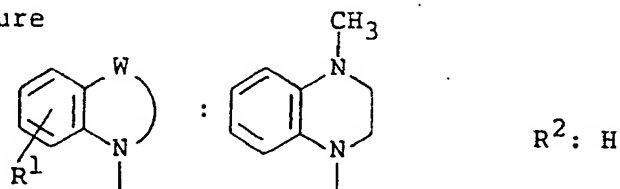
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 229.5 - 230.5°C

Form: Free

Example 189

Structure



Crystalline form: Yellow powder

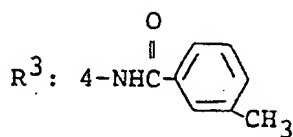
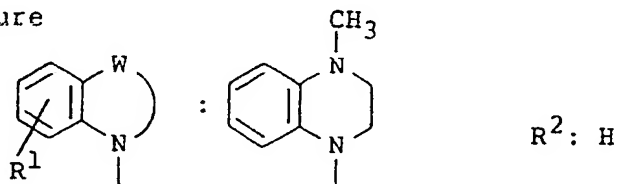
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 119.5 - 120.5°C

Form: Free

Example 190

Structure



Crystalline form: Yellow powder

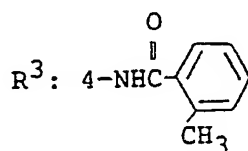
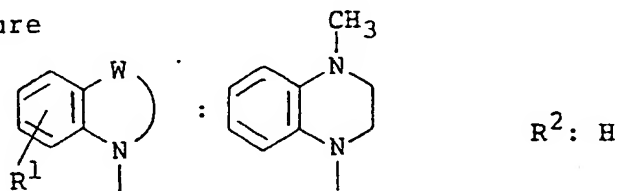
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 189 - 190°C

Form: Free

Example 191

Structure



Crystalline form: Yellow powder

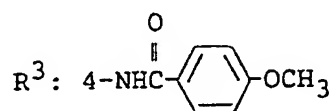
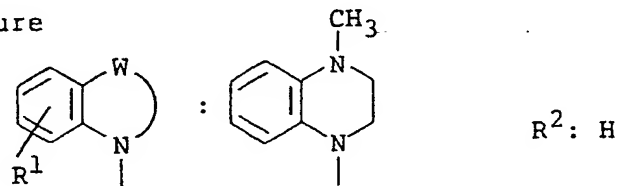
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 207 - 208°C

Form: Free

Example 192

Structure



Crystalline form: Yellow powder

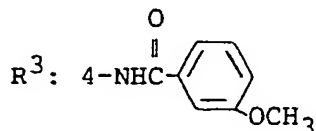
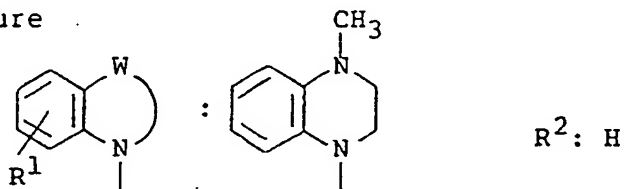
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 196.5 - 197.5°C

Form: Free

Example 193

Structure



Crystalline form: Yellow powder

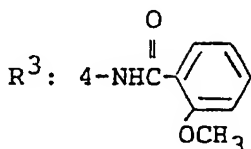
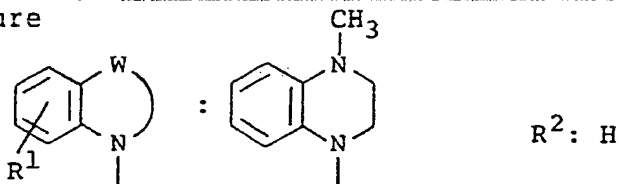
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 182 - 183°C

Form: Free

Example 194

Structure



Crystalline form: Yellow powder

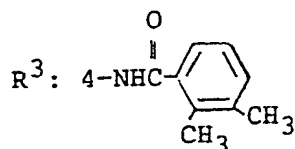
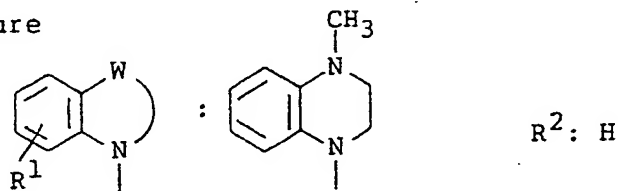
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 172 - 173°C

Form: Free

Example 195

Structure



Crystalline form: Yellow powder

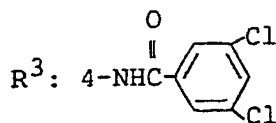
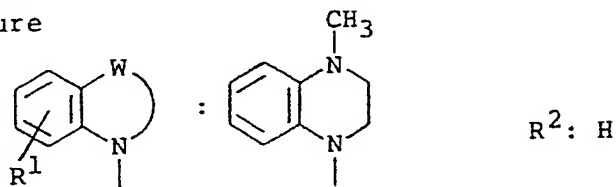
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 197.5 - 198.5°C

Form: Free

Example 196

Structure



Crystalline form: Yellow powder

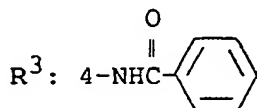
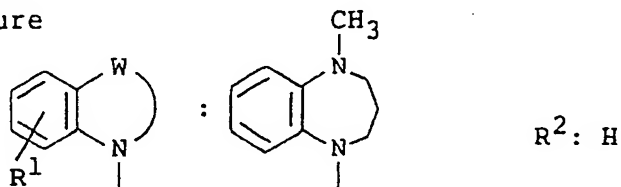
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 227 - 228°C

Form: Free

Example 197

Structure



Crystalline form: White powder

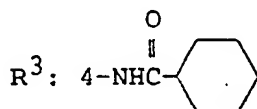
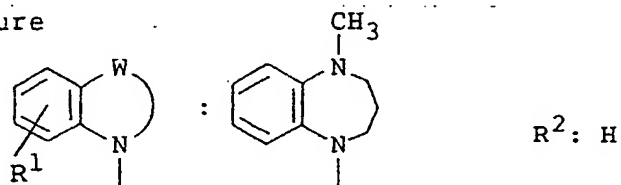
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 216.5 - 217.5°C

Form: Free

Example 198

Structure



Crystalline form: White powder

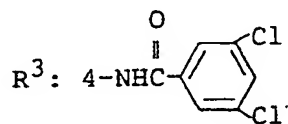
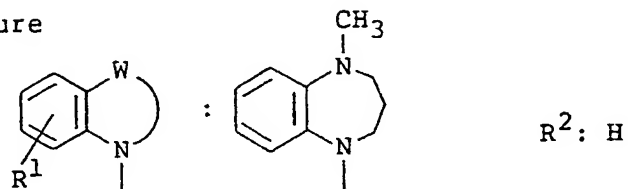
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 207 - 208°C

Form: Free

Example 199

Structure



Crystalline form: White powder

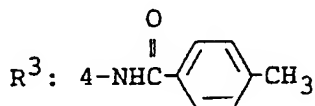
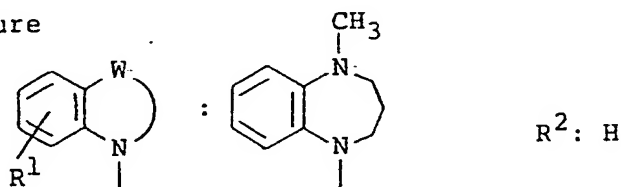
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 236 - 237°C

Form: Free

Example 200

Structure



Crystalline form: White powder

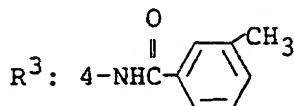
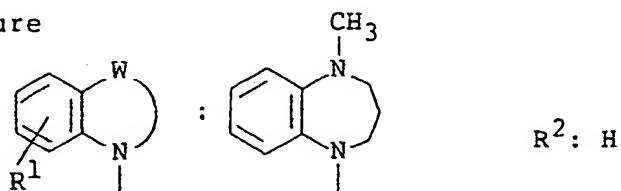
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 199.5 - 200.5°C

Form: Free

Example 201

Structure



Crystalline form: White powder

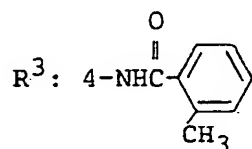
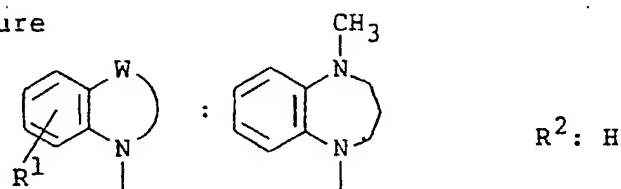
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 171.5 - 172.5°C

Form: Free

Example 202

Structure



Crystalline form: White powder

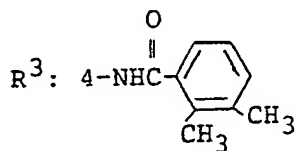
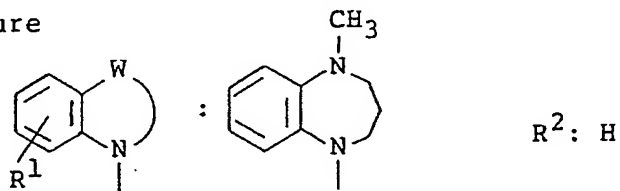
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 222.5 - 223.5°C

Form: Free

Example 203

Structure



Crystalline form: White powder

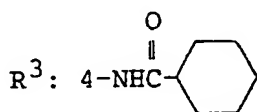
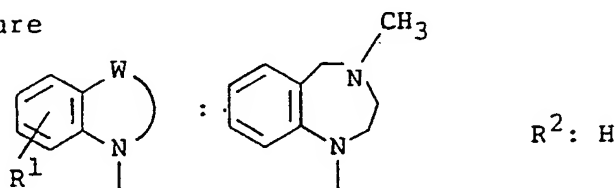
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 209.5 - 210.5°C

Form: Free

Example 204

Structure



Crystalline form: White powder

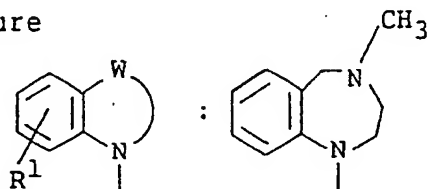
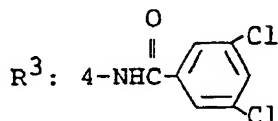
Recrystallization solvent: Ethanol/water

NMR analysis: 14)

Form: Hydrochloride

Example 205

Structure

 $R^2: H$ 

Crystalline form: White powder

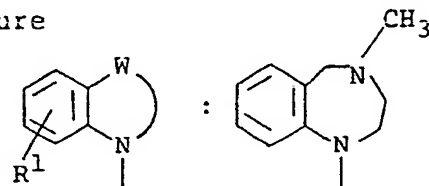
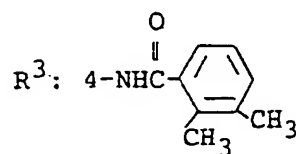
Recrystallization solvent: Ethanol/water

NMR analysis: 15)

Form: Hydrochloride

Example 206

Structure

 $R^2: H$ 

Crystalline form: White powder

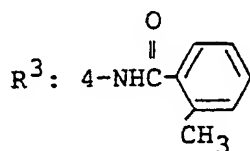
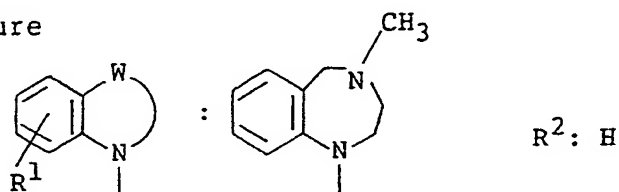
Recrystallization solvent: Ethanol/water

NMR analysis: 16)

Form: Hydrochloride

Example 207

Structure



Crystalline form: White powder

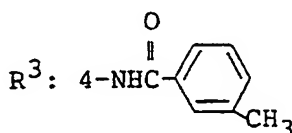
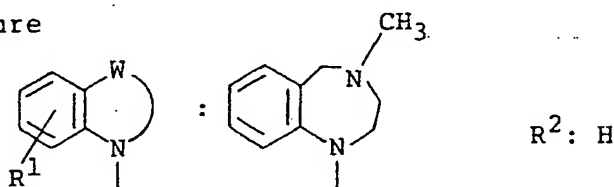
Recrystallization solvent: Ethanol/water

NMR analysis: 17)

Form: Hydrochloride

Example 208

Structure



Crystalline form: White powder

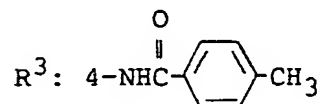
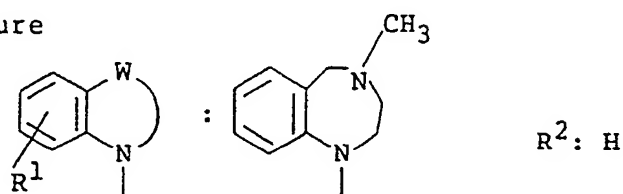
Recrystallization solvent: Ethanol/water

NMR analysis: 18)

Form: Hydrochloride

Example 209

Structure



Crystalline form: Yellow powder

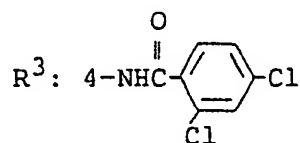
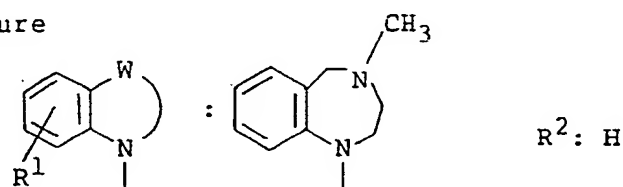
Recrystallization solvent: Ethanol/water

NMR analysis: 19)

Form: Hydrochloride

Example 210

Structure



Crystalline form: White powder

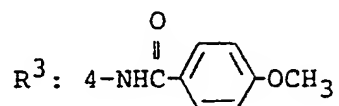
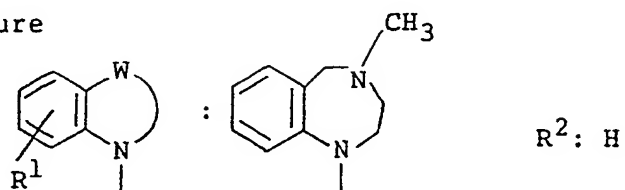
Recrystallization solvent: Ethanol/water

NMR analysis: 20)

Form: Hydrochloride

Example 211

Structure



Crystalline form: White powder

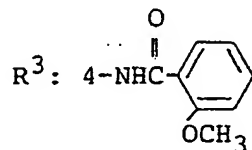
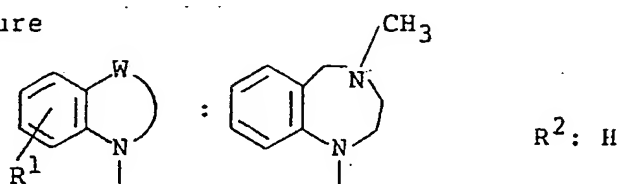
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 159.5 - 160.5°C

Form: Free

Example 212

Structure



Crystalline form: White powder

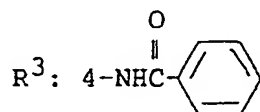
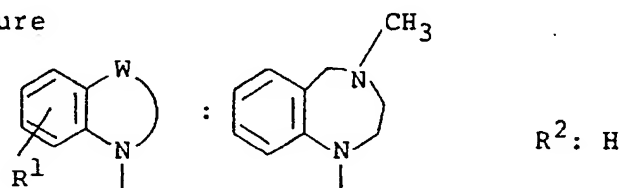
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 189.5 - 190.5°C

Form: Free.

Example 213

Structure



Crystalline form: White powder

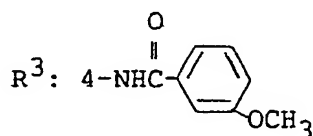
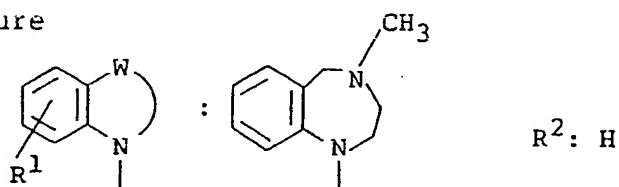
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 170.5 - 171.5°C

Form: Free

Example 214

Structure



Crystalline form: White powder

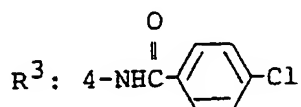
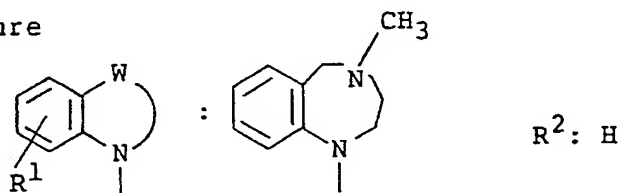
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 165 - 166°C

Form: Free

Example 215

Structure



Crystalline form: White powder

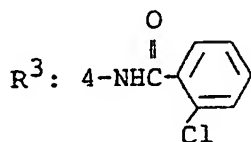
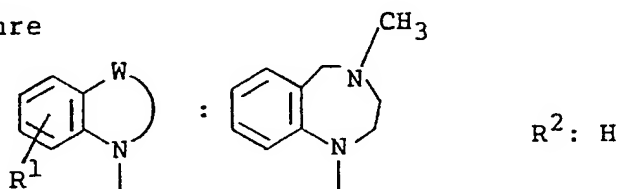
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 173.5 - 174.5°C

Form: Free

Example 216

Structure



Crystalline form: White powder

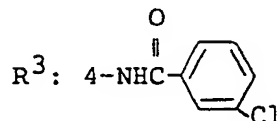
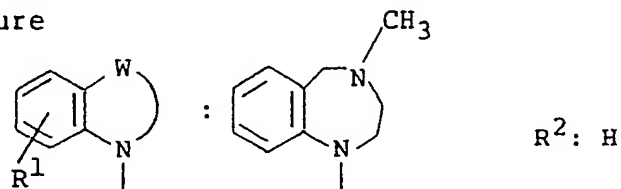
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 182 - 183°C

Form: Free

Example 217

Structure



Crystalline form: White powder

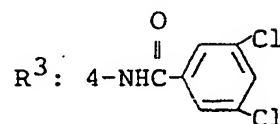
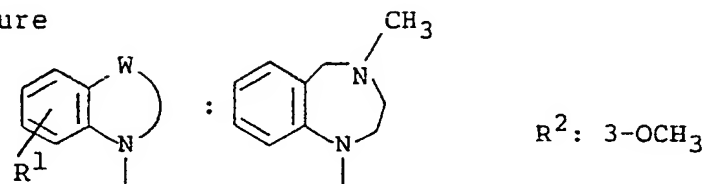
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 225.5 - 226.5°C

Form: Free

Example 219

Structure



Crystalline form: White powder

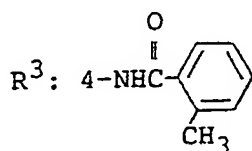
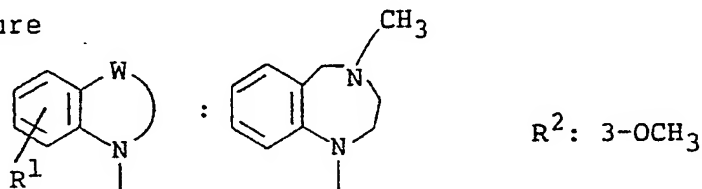
Recrystallization solvent: Ethanol/water

NMR analysis: 21)

Form: Hydrochloride

Example 220

Structure



Crystalline form: White powder

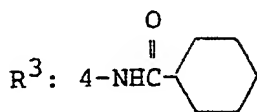
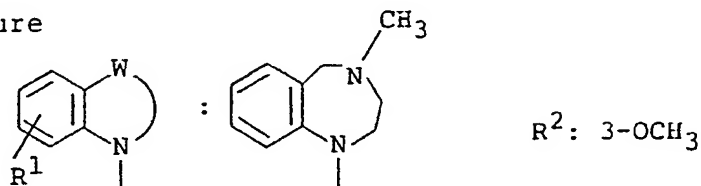
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 147.5 - 148.5°C

Form: Free

Example 221

Structure



Crystalline form: White powder

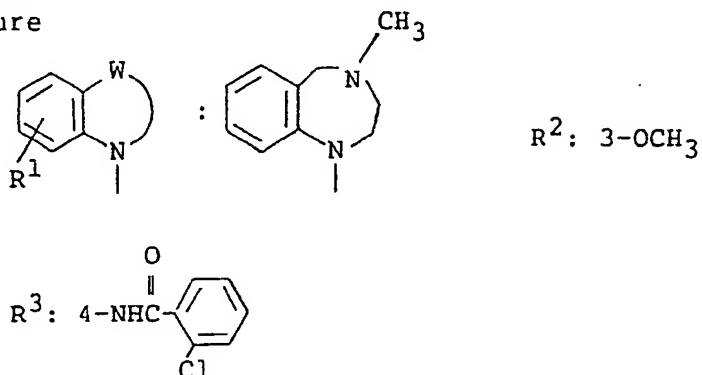
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 136 - 137°C

Form: Free

Example 222

Structure



Crystalline form: White powder

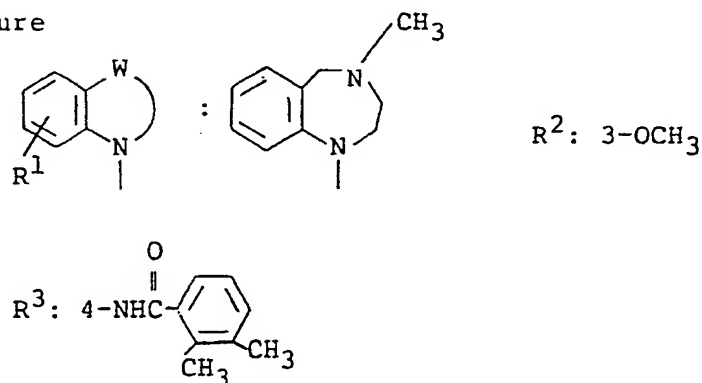
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 191.5 - 192.5°C

Form: Free

Example 223

Structure



Crystalline form: White powder

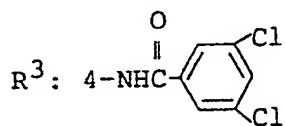
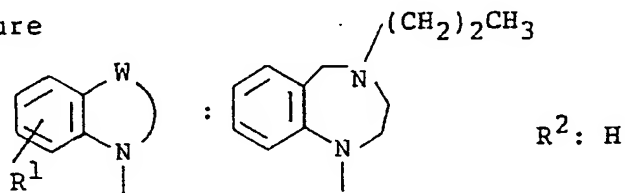
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 145 - 146°C

Form: Free

Example 224

Structure



Crystalline form: White powder

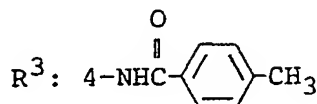
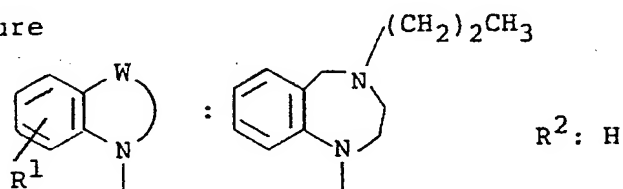
Recrystallization solvent: Ethanol/water

NMR analysis: 22)

Form: Hydrochloride

Example 225

Structure



Crystalline form: White powder

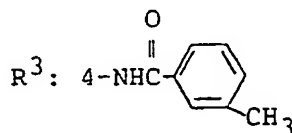
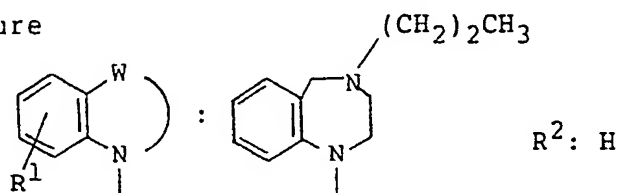
Recrystallization solvent: Ethanol/water

NMR analysis: 23)

Form: Hydrochloride

Example 226

Structure



Crystalline form: White powder

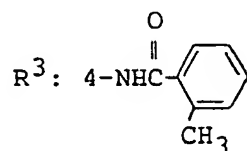
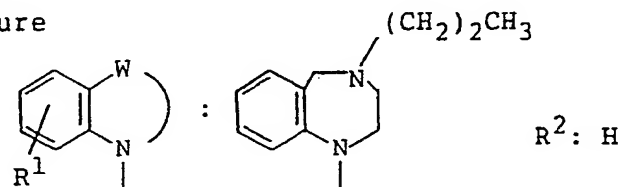
Recrystallization solvent: Ethanol/water

NMR analysis: 24)

Form: Hydrochloride

Example 227

Structure



Crystalline form: White powder

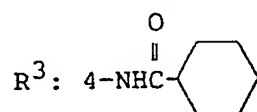
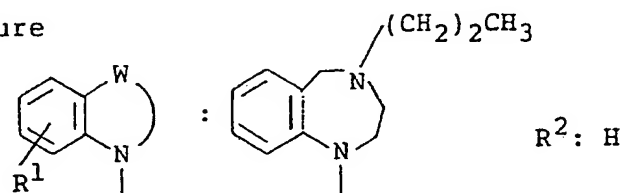
Recrystallization solvent: Ethanol/water

NMR analysis: 25)

Form: Hydrochloride

Example 228

Structure



Crystalline form: White powder

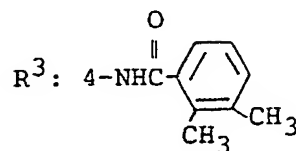
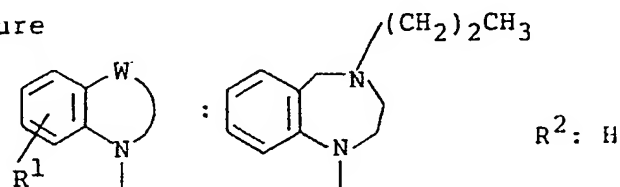
Recrystallization solvent: Ethanol/water

NMR analysis: 26)

Form: Hydrochloride

Example 229

Structure



Crystalline form: White powder

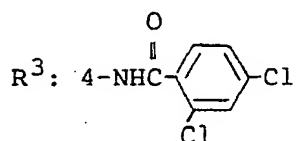
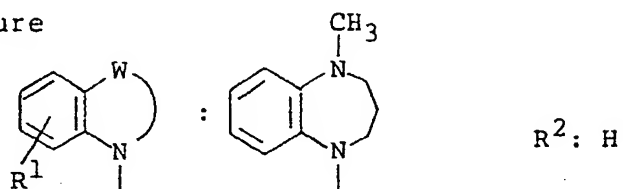
Recrystallization solvent: Ethanol/water

NMR analysis: 27)

Form: Hydrochloride

Example 230

Structure



Crystalline form: White powder

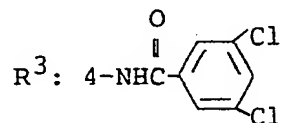
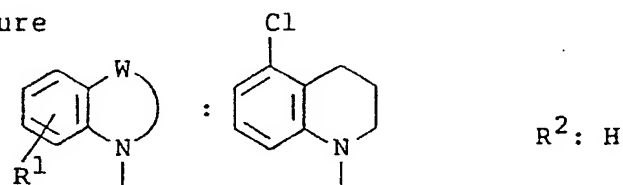
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 206 - 207°C

Form: Free

Example 231

Structure



Crystalline form: White powder

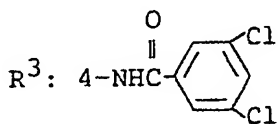
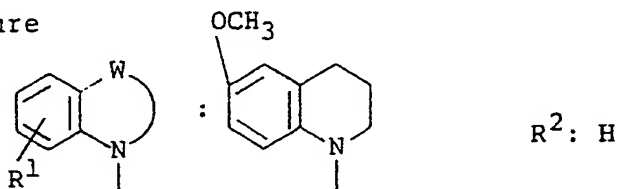
Recrystallization solvent: Chloroform/methanol

Melting Point: 211 - 213°C

Form: Free

Example 232

Structure



Crystalline form: White powder

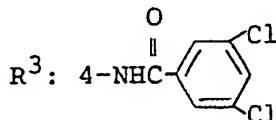
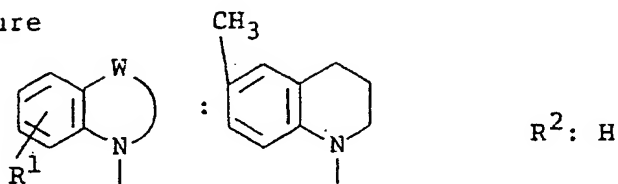
Recrystallization solvent: Chloroform/methanol

Melting Point: 228.5 - 229.5°C

Form: Free

Example 233

Structure



Crystalline form: White powder

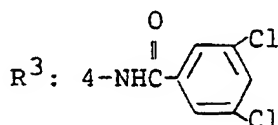
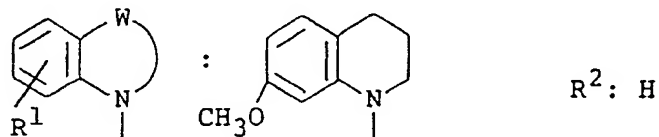
Recrystallization solvent: Chloroform/methanol

Melting Point: 237 - 238°C

Form: Free

Example 234

Structure



Crystalline form: White powder

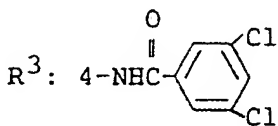
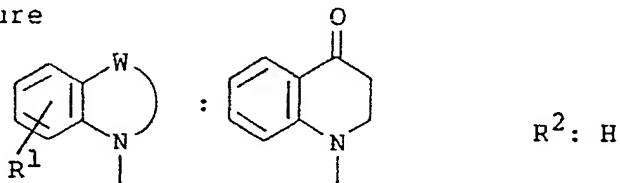
Recrystallization solvent: Chloroform/methanol

Melting Point: 226 - 228°C

Form: Free

Example 235

Structure



Crystalline form: White powder

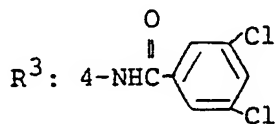
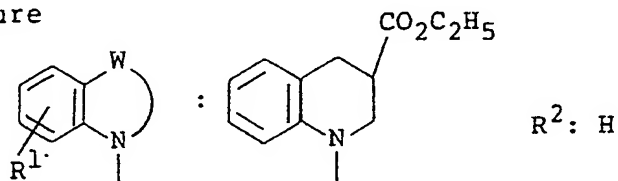
Recrystallization solvent: Chloroform/methanol

Melting Point: 220 - 222°C

Form: Free

Example 236

Structure



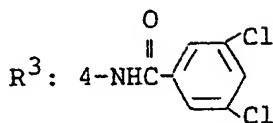
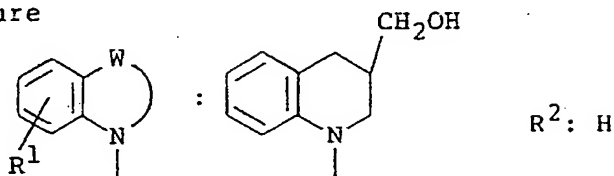
Crystalline form: Colorless amorphous

NMR analysis: 28)

Form: Free

Example 237

Structure



Crystalline form: White powder

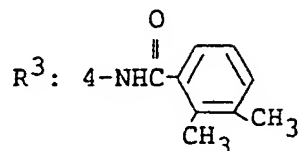
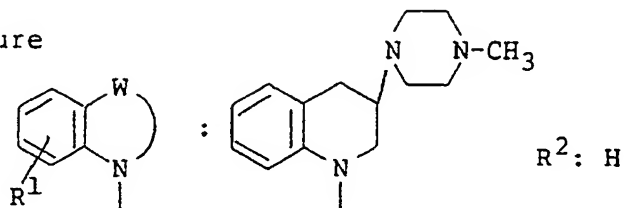
Recrystallization solvent: Ethanol

Melting Point: 162 - 165°C

Form: Free

Example 238

Structure



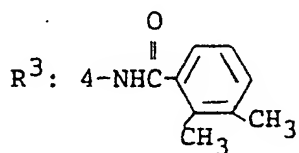
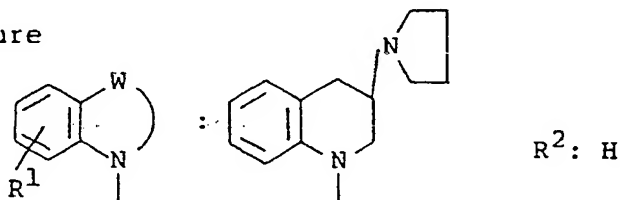
Crystalline form: Light brown amorphous

NMR analysis: 29)

Form: Free

Example 239

Structure



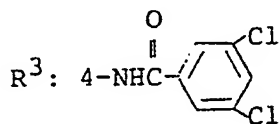
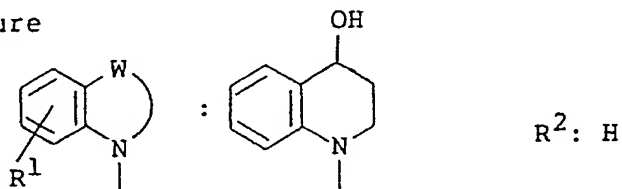
Crystalline form: Light brown amorphous

NMR analysis: 30)

Form: Free

Example 240

Structure



Crystalline form: White powder

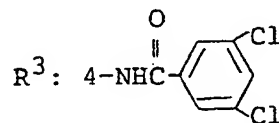
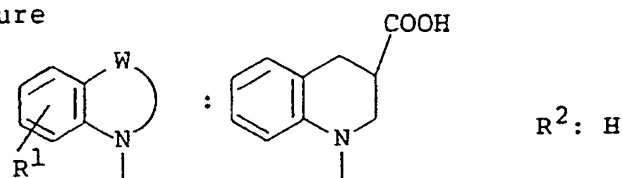
Recrystallization solvent: Ethanol

Melting Point: 215 - 217°C

Form: Free

Example 241

Structure



Crystalline form: White powder

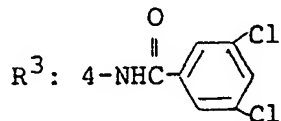
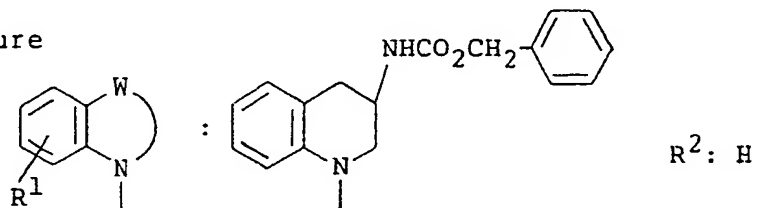
Recrystallization solvent: Ethanol

Melting Point: 221 - 223°C

Form: Free

Example 242

Structure



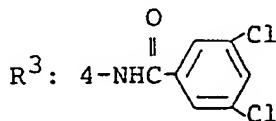
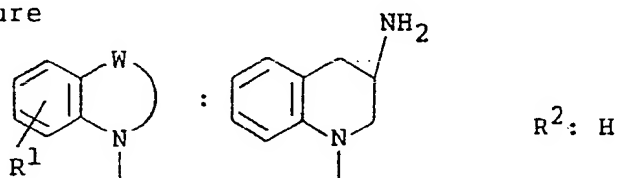
Crystalline form: Colorless amorphous

NMR analysis: 31)

Form: Free

Example 243

Structure



Crystalline form: White powder

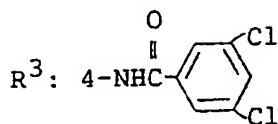
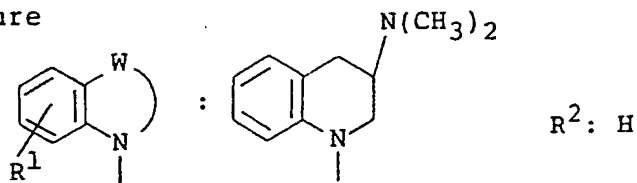
Recrystallization solvent: Ethanol

Melting Point: 207 - 210°C

Form: Free

Example 244

Structure



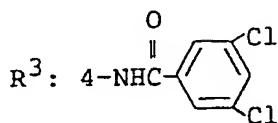
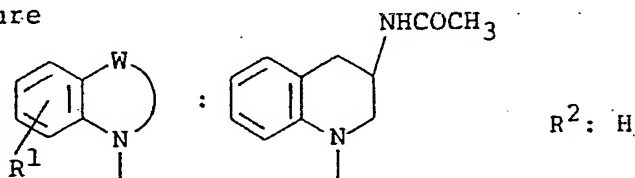
Crystalline form: Colorless amorphous

NMR analysis: 32)

Form: Free

Example 245

Structure



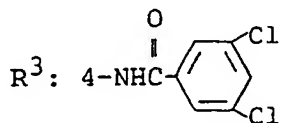
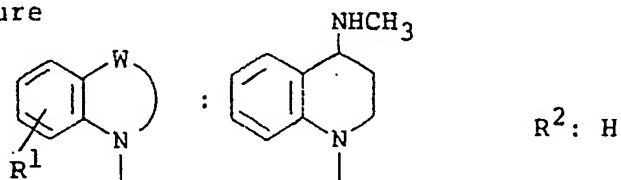
Crystalline form: Colorless amorphous

NMR analysis: 33)

Form: Free

Example 246

Structure



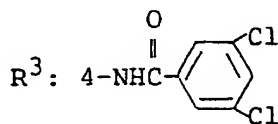
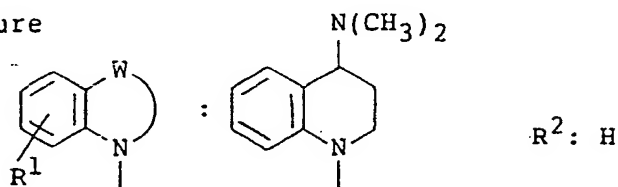
Crystalline form: Colorless amorphous

NMR analysis: 34)

Form: Free

Example 247

Structure



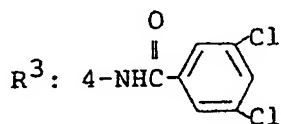
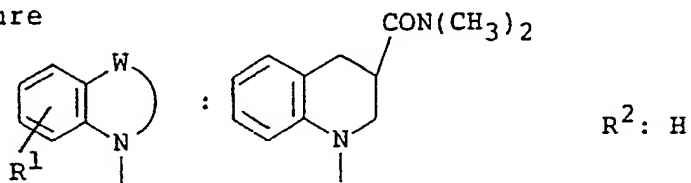
Crystalline form: Colorless amorphous

NMR analysis: 35)

Form: Free

Example 248

Structure



Crystalline form: Light yellow powder

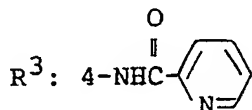
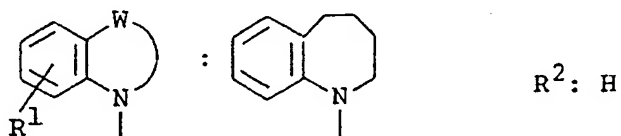
Recrystallization solvent: Ethanol

Melting Point: 186 - 187°C

Form: Free

Example 249

Structure



Crystalline form: Colorless needles

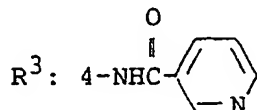
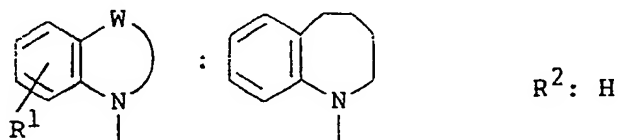
Recrystallization solvent: Ethanol

Melting Point: 190 - 191°C

Form: Free

Example 250

Structure



Crystalline form: Light yellow scales

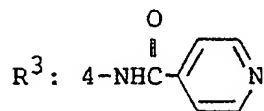
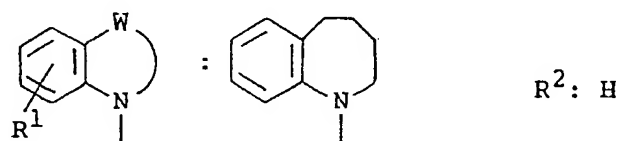
Recrystallization solvent: Ethanol/water

Melting Point: 230 - 231°C

Form: Free

Example 251

Structure



Crystalline form: Light yellow needles

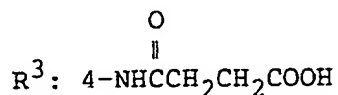
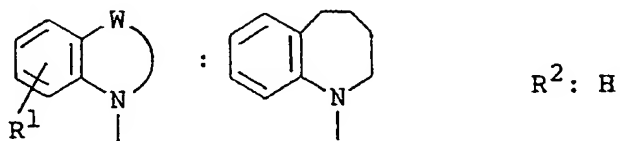
Recrystallization solvent: Ethanol

Melting Point: 227 - 228°C

Form: Free

Example 252

Structure



Crystalline form: Colorless needles

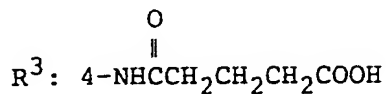
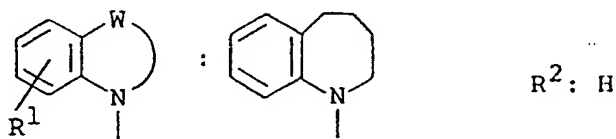
Recrystallization solvent: Ethyl acetate

Melting Point: 192°C

Form: Free

Example 253

Structure



Crystalline form: White powder

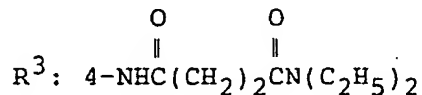
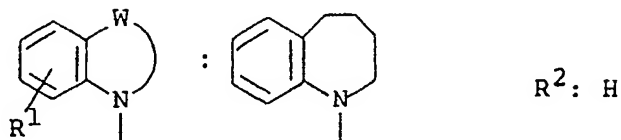
Recrystallization solvent: Ethyl acetate

Melting Point: 186.5--189°C

Form: Free

 Example 254

Structure



Crystalline form: Light yellow scales

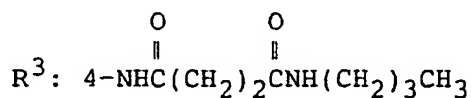
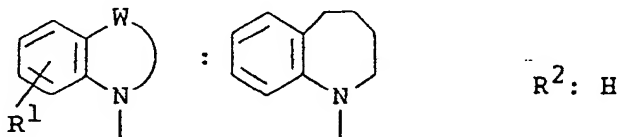
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 165 - 167°C

Form: Free

 Example 255

Structure



Crystalline form: White powder

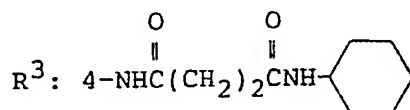
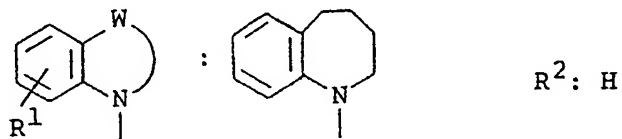
Recrystallization solvent: Ethyl acetate

Melting Point: 169 - 170°C

Form: Free

Example 256

Structure



Crystalline form: Colorless scales

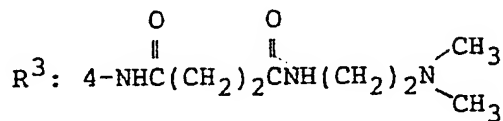
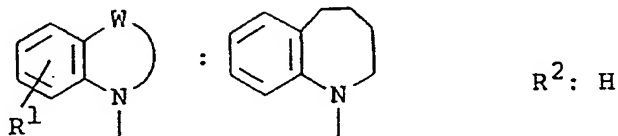
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 174 - 177°C

Form: Free

Example 257

Structure



Crystalline form: White powder

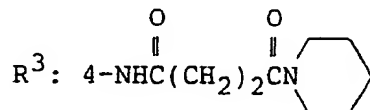
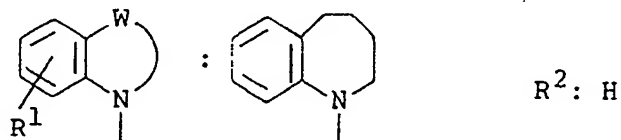
Recrystallization solvent: Ethyl acetate

Melting Point: 114 - 118°C

Form: Free

Example 258

Structure



Crystalline form: White powder

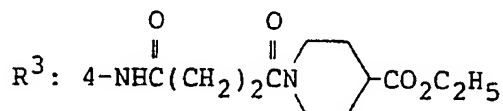
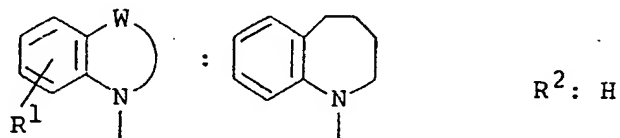
Recrystallization solvent: Ethyl acetate

Melting Point: 170 - 172°C

Form: Free

Example 259

Structure



Crystalline form: White powder

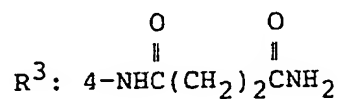
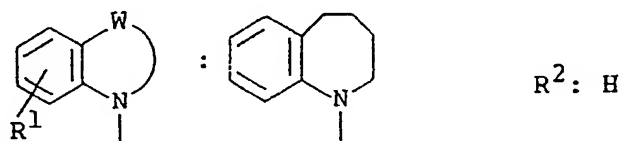
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 179 - 181°C

Form: Free

Example 260

Structure



Crystalline form: White powder

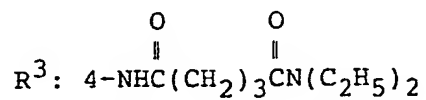
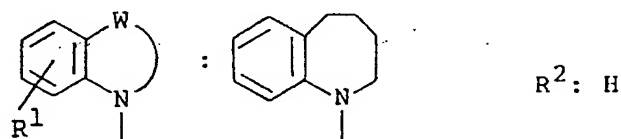
Recrystallization solvent: Ethyl acetate

Melting Point: 118 - 121°C

Form: Free

Example 261

Structure



Crystalline form: White powder

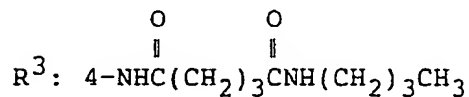
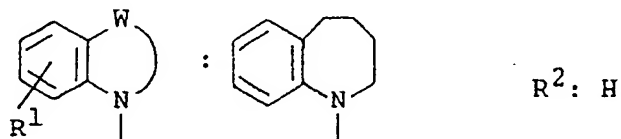
Recrystallization solvent: Ethyl acetate

Melting Point: 144 - 148°C

Form: Free

Example 262

Structure



Crystalline form: Colorless scales

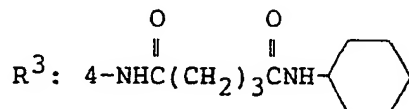
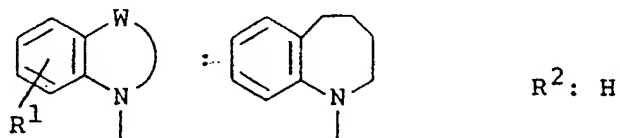
Recrystallization solvent: Ethyl acetate

Melting Point: 156 - 157°C

Form: Free

Example 263

Structure



Crystalline form: White powder

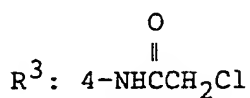
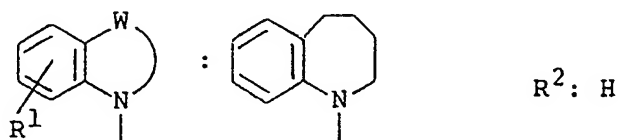
Recrystallization solvent: Ethyl acetate

Melting Point: 204 - 206°C

Form: Free

Example 264

Structure



Crystalline form: Light yellow powder

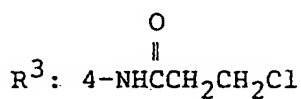
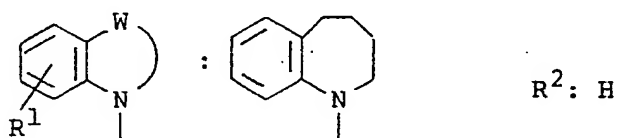
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 165 - 167°C

Form: Free

Example 265

Structure



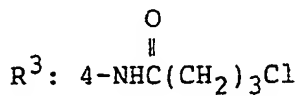
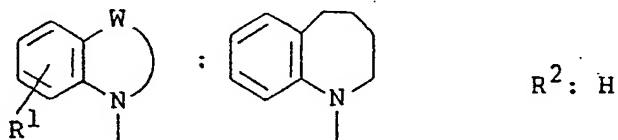
Crystalline form: Light yellow amorphous

NMR analysis: 36)

Form: Free

Example 266

Structure



Crystalline form: White powder

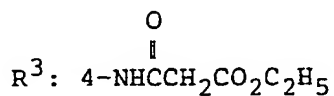
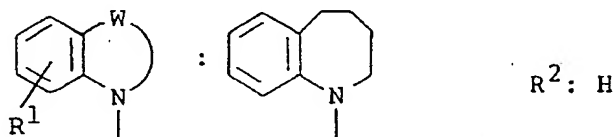
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 122 - 124°C

Form: Free

Example 267

Structure



Crystalline form: Light yellow powder

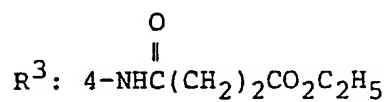
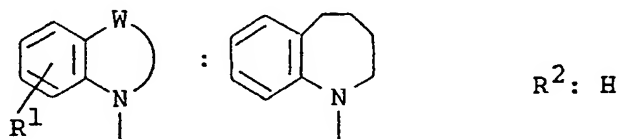
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 116 - 117°C

Form: Free

Example 268

Structure



Crystalline form: White powder

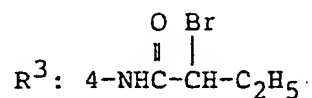
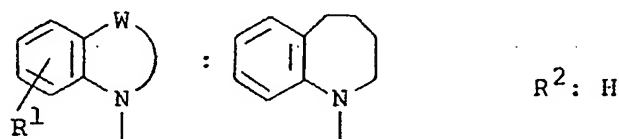
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 121 - 123°C

Form: Free

Example 269

Structure



Crystalline form: Colorless needles

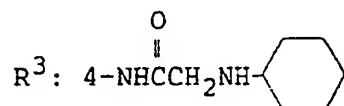
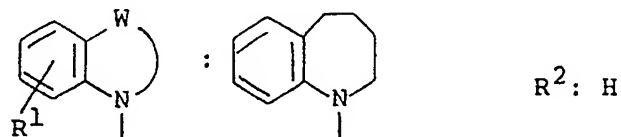
Recrystallization solvent: Ethyl acetate

Melting Point: 186 - 187°C

Form: Free

Example 270

Structure



Crystalline form: White powder

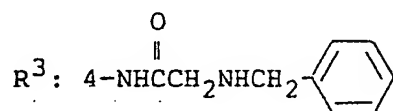
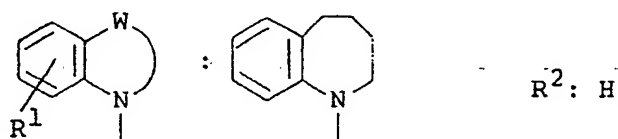
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 139 - 142°C

Form: Free

Example 271

Structure



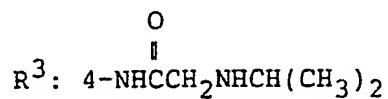
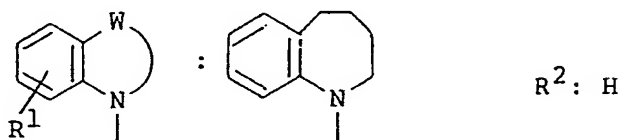
Crystalline form: Light yellow amorphous

NMR analysis: 37)

Form: Free

Example 272

Structure



Crystalline form: White powder

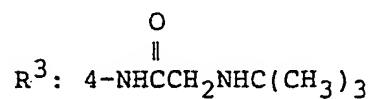
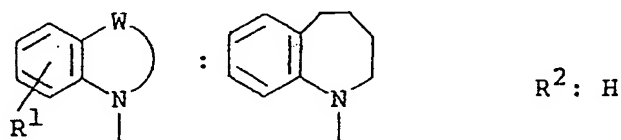
Recrystallization solvent: Ethyl acetate

Melting Point: 149.5 - 152.5°C

Form: Free

Example 273

Structure



Crystalline form: Colorless needles

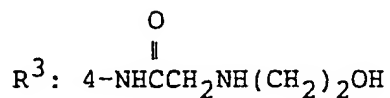
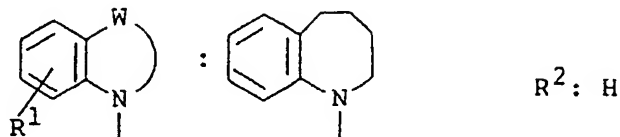
Recrystallization solvent: Ethanol

Melting Point: 150 - 152.5°C

Form: Free

Example 274

Structure



Crystalline form: White powder

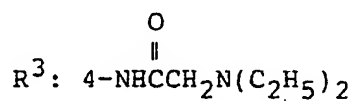
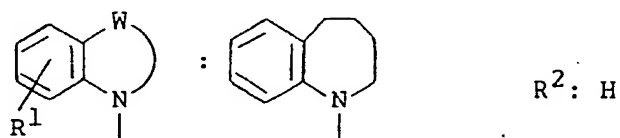
Recrystallization solvent: Ethyl acetate

Melting Point: 150°C

Form: Free

Example 275

Structure



Crystalline form: Colorless needles

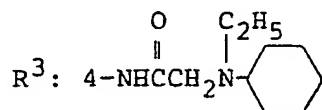
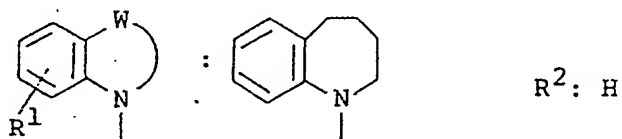
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 101 - 104°C

Form: Free

Example 276

Structure



Crystalline form: White powder

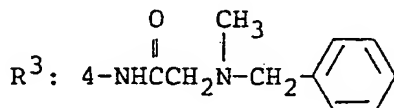
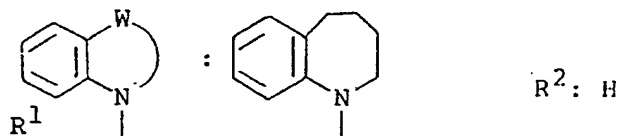
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 120 - 122°C

Form: Free

Example 277

Structure



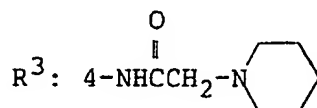
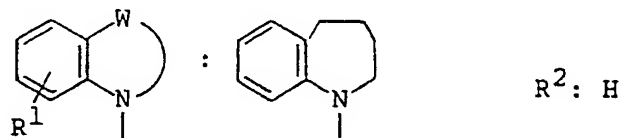
Crystalline form: Light yellow amorphous

NMR analysis: 38)

Form: Free

Example 278

Structure



Crystalline form: Colorless needles

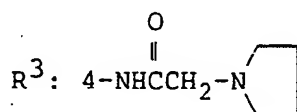
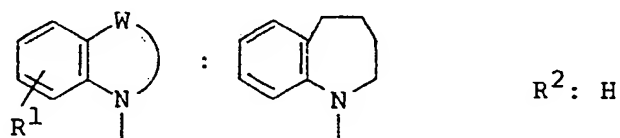
Recrystallization solvent: Ethanol

Melting Point: 183 - 186°C

Form: Free

Example 279

Structure



Crystalline form: Light brown powder

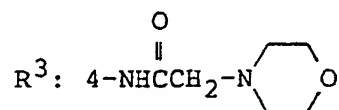
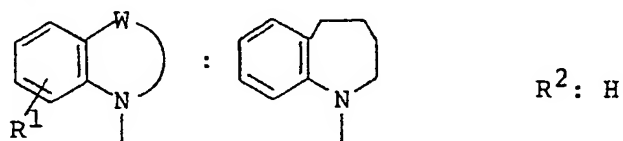
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 139 - 142°C

Form: Free

Example 280

Structure



Crystalline form: Light yellow powder

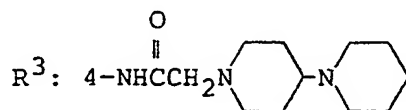
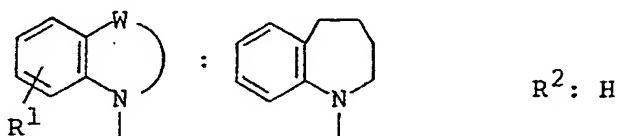
Recrystallization solvent: Ethanol

Melting Point: 162 - 165°C

Form: Free

Example 281

Structure



Crystalline form: Light yellow scales

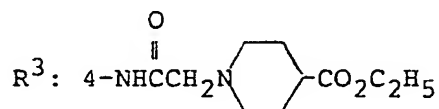
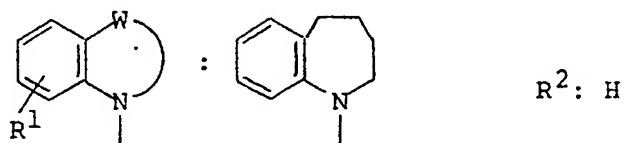
Recrystallization solvent: Ethyl acetate

Melting Point: 224 - 227°C

Form: Free

Example 282

Structure



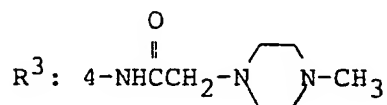
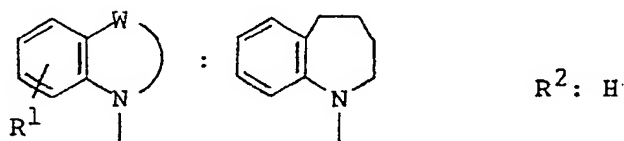
Crystalline form: Light yellow amorphous

NMR analysis: 39)

Form: Free

Example 283

Structure



Crystalline form: Light yellow powder

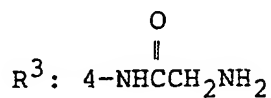
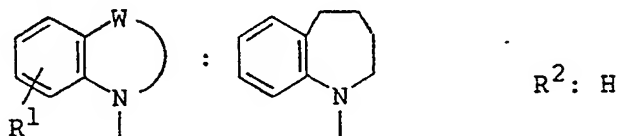
Recrystallization solvent: Ethanol/water

Melting Point: 162 - 164°C

Form: Free

Example 284

Structure



Crystalline form: Light yellow powder

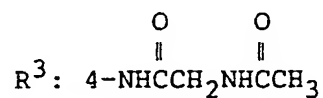
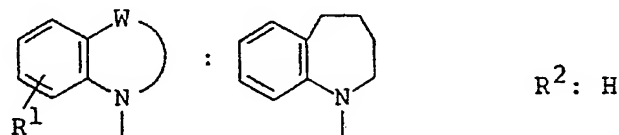
Recrystallization solvent: Ethanol

Melting Point: 238 - 241°C (decomposed)

Form: Hydrochloride

Example 285

Structure



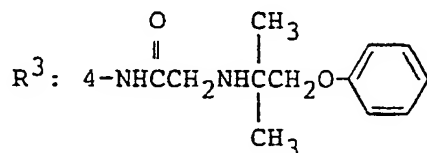
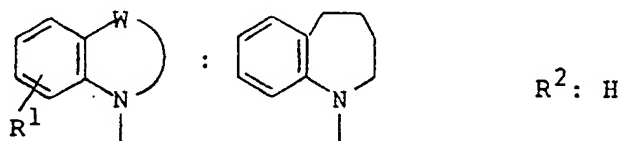
Crystalline form: Light yellow amorphous

NMR analysis: 40)

Form: Free

Example 286

Structure



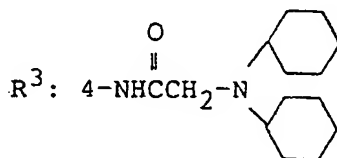
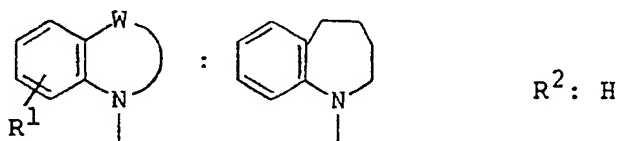
Crystalline form: Colorless amorphous

NMR analysis: 41)

Form: Free

Example 287

Structure



Crystalline form: Colorless needles

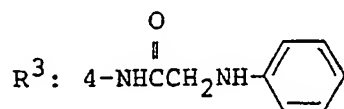
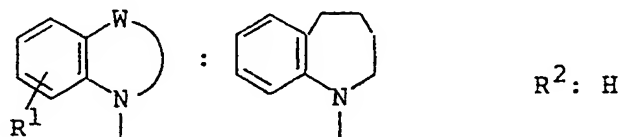
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 168 - 169°C

Form: Free

Example 288

Structure



Crystalline form: Light brown powder

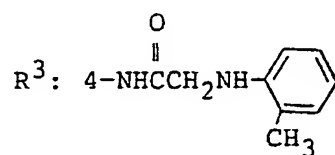
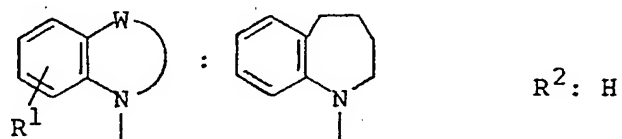
Recrystallization solvent: Ethanol

Melting Point: 189 - 191°C

Form: Free

Example 289

Structure



Crystalline form: White powder

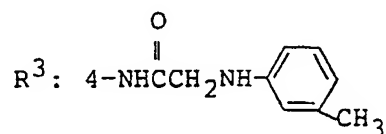
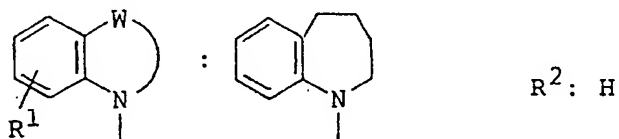
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 200 - 202°C

Form: Free

Example 290

Structure



Crystalline form: Colorless scales

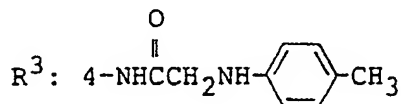
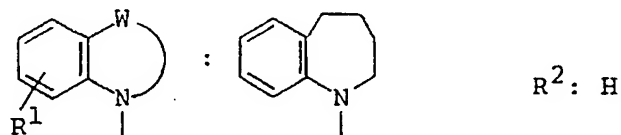
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 143 - 146°C

Form: Free

Example 291

Structure



Crystalline form: White powder

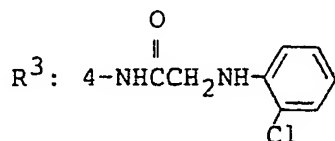
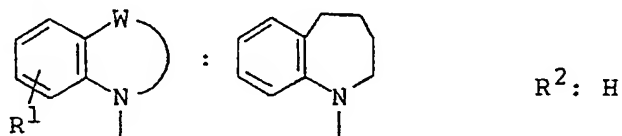
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 117 - 117.5°C

Form: Free

Example 292

Structure



Crystalline form: Light brown powder

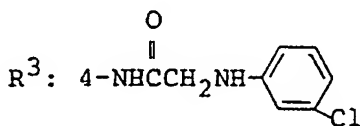
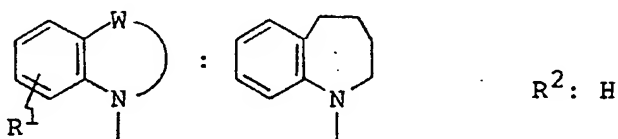
Recrystallization solvent: Diethyl ether/ethyl acetate

Melting Point: 225 - 226°C

Form: Free

Example 293

Structure



Crystalline form: White powder

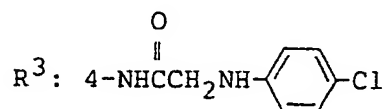
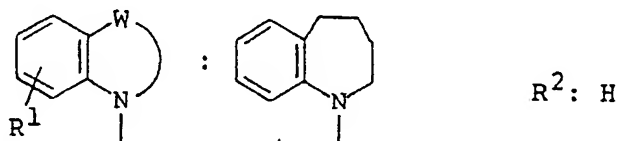
Recrystallization solvent: n-Hexane/ethanol

Melting Point: 175 - 176.5°C

Form: Free

Example 294

Structure



Crystalline form: White powder

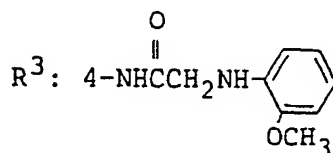
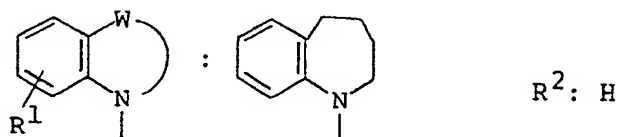
Recrystallization solvent: Ethyl acetate

Melting Point: 234 - 236°C

Form: Free

Example 295

Structure



Crystalline form: Colorless scales

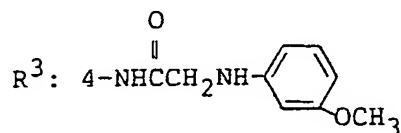
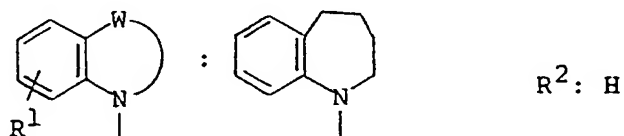
Recrystallization solvent: Ethyl acetate

Melting Point: 172 - 174°C

Form: Free

Example 296

Structure



Crystalline form: White powder

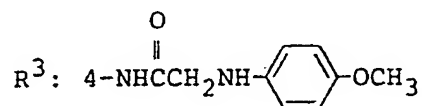
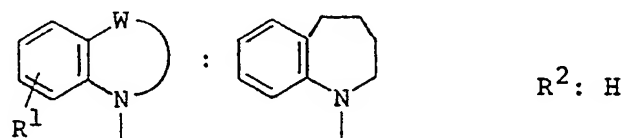
Recrystallization solvent: Ethyl acetate

Melting Point: 154 - 155°C

Form: Free

Example 297

Structure



Crystalline form: Light yellow needles

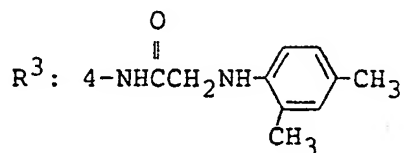
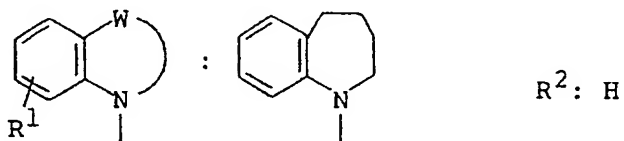
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 181.5 - 183.5°C

Form: Free

Example 298

Structure



Crystalline form: White powder

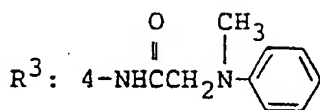
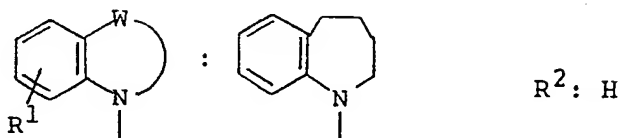
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 173 - 175°C

Form: Free

Example 299

Structure



Crystalline form: White powder

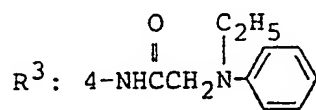
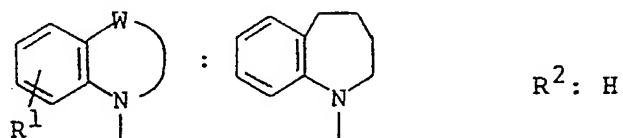
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 137 - 138°C

Form: Free

Example 300

Structure



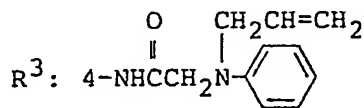
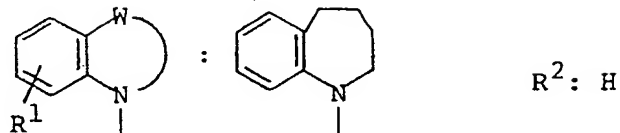
Crystalline form: Light yellow amorphous

NMR analysis: 42)

Form: Free

Example 301

Structure



Crystalline form: Colorless needles

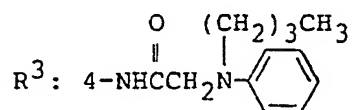
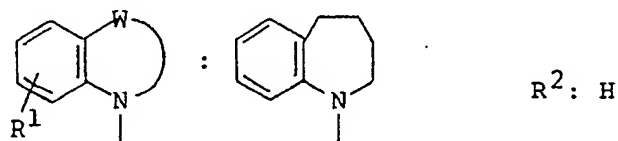
Recrystallization solvent: Diethyl ether/ethyl acetate

Melting Point: 129 - 130°C

Form: Free

Example 302

Structure



Crystalline form: Colorless needles

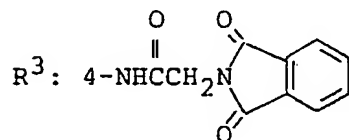
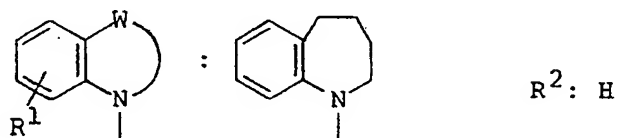
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 181 - 183°C

Form: Free

Example 303

Structure



Crystalline form: White powder

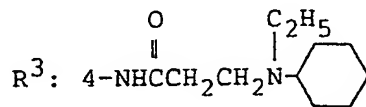
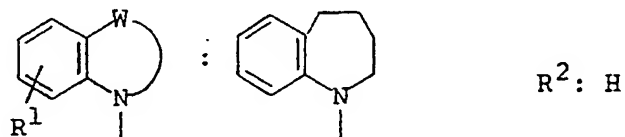
Recrystallization solvent: Ethyl acetate

Melting Point: 248 - 249°C

Form: Free

Example 304

Structure



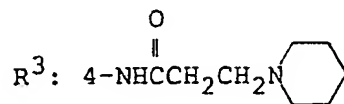
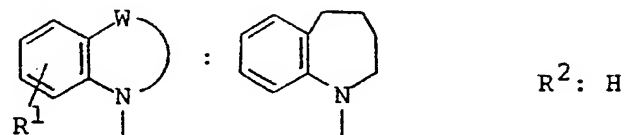
Crystalline form: Light yellow amorphous

NMR analysis: 43)

Form: Free

Example 305

Structure



Crystalline form: Light yellow needles

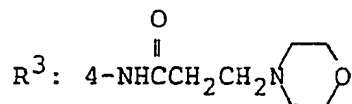
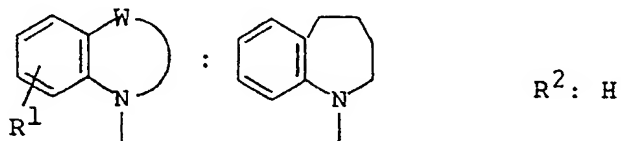
Recrystallization solvent: Ethanol

Melting Point: 94 - 96°C

Form: Free

Example 306

Structure



Crystalline form: Light brown powder

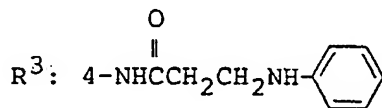
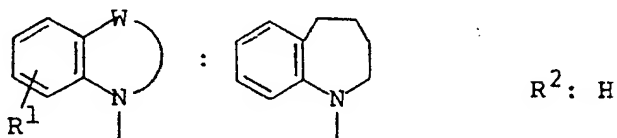
Recrystallization solvent: Ethyl acetate

Melting Point: 159 - 161°C

Form: Free

Example 307

Structure



Crystalline form: White powder

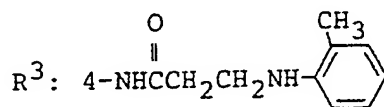
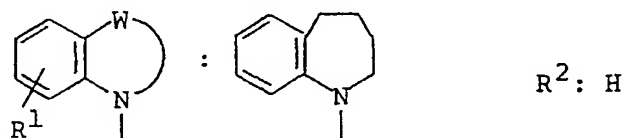
Recrystallization solvent: Ethyl acetate

Melting Point: 180 - 183°C

Form: Free

Example 308

Structure



Crystalline form: Light brown powder

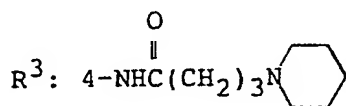
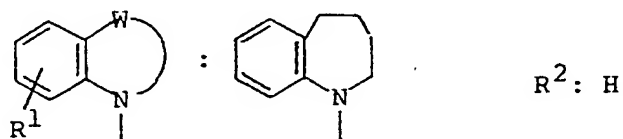
Recrystallization solvent: Ethanol

Melting Point: 177 - 180°C

Form: Free

Example 309

Structure



Crystalline form: White powder

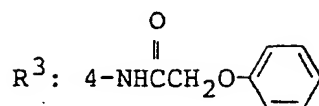
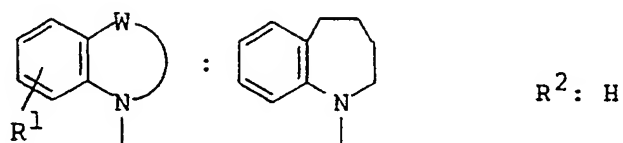
Recrystallization solvent: Ethyl acetate

Melting Point: 91 - 93°C

Form: Free

Example 310

Structure



Crystalline form: Light brown scales

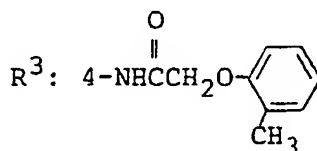
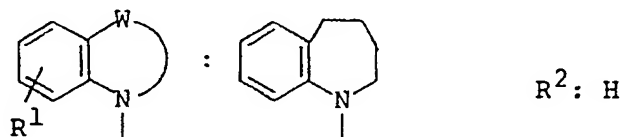
Recrystallization solvent: Ethanol

Melting Point: 155 - 156.5°C

Form: Free

Example 311

Structure



Crystalline form: Colorless scales

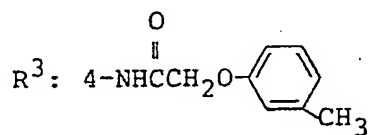
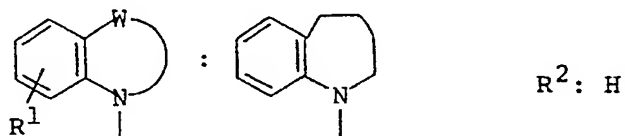
Recrystallization solvent: Ethyl acetate

Melting Point: 172.5 - 175°C

Form: Free

Example 312

Structure



Crystalline form: White powder

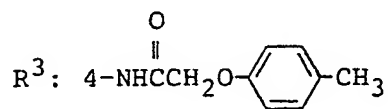
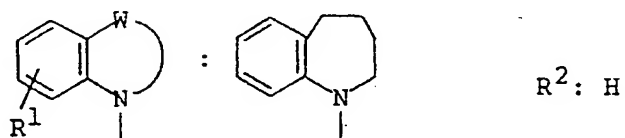
Recrystallization solvent: Ethanol

Melting Point: 148 - 150.5°C

Form: Free

Example 313

Structure



Crystalline form: White powder

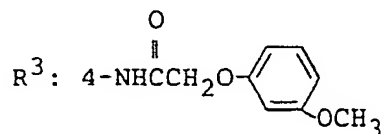
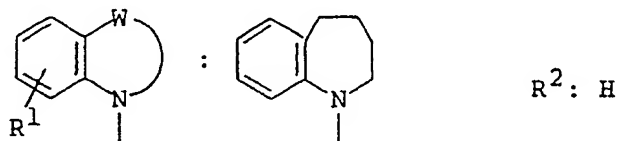
Recrystallization solvent: Ethyl acetate

Melting Point: 172 - 173°C

Form: Free

Example 314

Structure



Crystalline form: Colorless scales

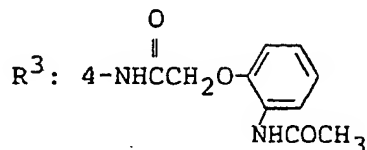
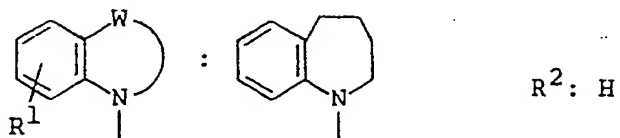
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 133 - 135°C

Form: Free

Example 315

Structure



Crystalline form: White powder

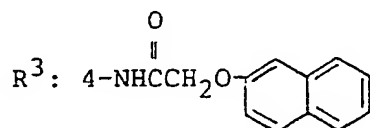
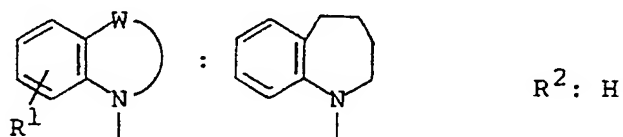
Recrystallization solvent: Ethyl acetate

Melting Point: 217 - 219°C

Form: Free

Example 316

Structure



Crystalline form: Colorless needles

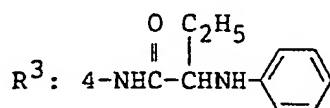
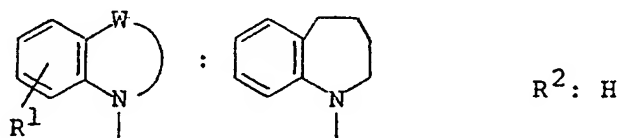
Recrystallization solvent: Ethyl acetate

Melting Point: 226 - 227.5°C

Form: Free

Example 317

Structure



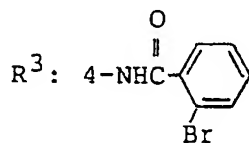
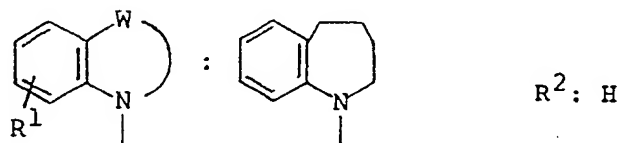
Crystalline form: Colorless amorphous

NMR analysis: 44)

Form: Free

Example 318

Structure



Crystalline form: White powder

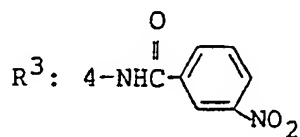
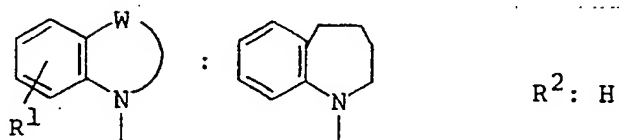
Recrystallization solvent: Dichloromethane

Melting Point: 234 - 235°C

Form: Free

Example 319

Structure



Crystalline form: Colorless prisms

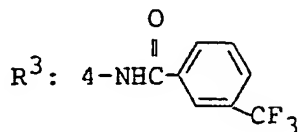
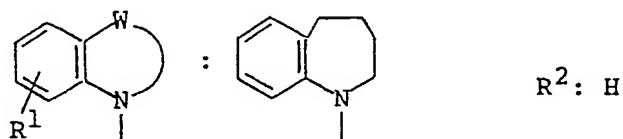
Recrystallization solvent: Methanol

Melting Point: 218 - 218.5°C

Form: Free

Example 320

Structure



Crystalline form: Colorless prisms

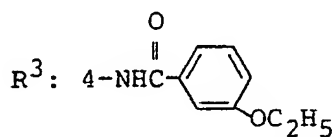
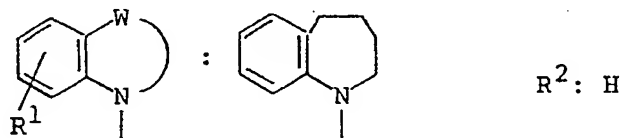
Recrystallization solvent: Ethanol

Melting Point: 202.5 - 206°C

Form: Free

Example 321

Structure



Crystalline form: White powder

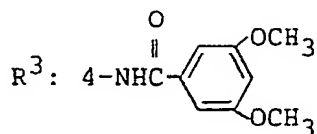
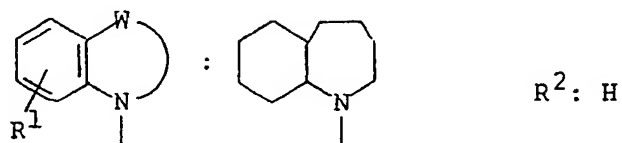
Recrystallization solvent: Ethanol

Melting Point: 174 - 176°C

Form: Free

Example 322

Structure



Crystalline form: Colorless prisms

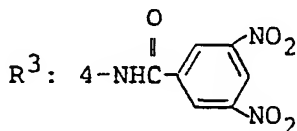
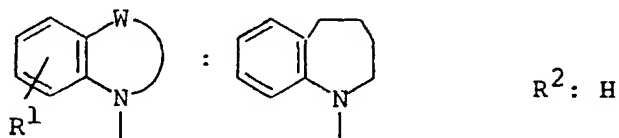
Recrystallization solvent: Ethanol

Melting Point: 216 - 218°C

Form: Free

Example 323

Structure



Crystalline form: White powder

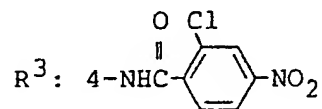
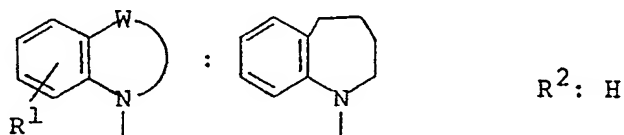
Melting Point: >300°C

NMR analysis: 45)

Form: Free

Example 324

Structure



Crystalline form: Colorless prisms

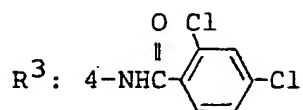
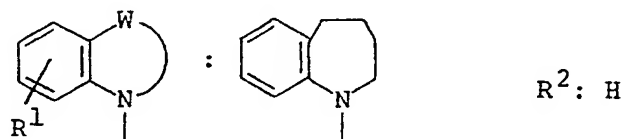
Recrystallization solvent: Ethanol

Melting Point: 250.5 - 251°C

Form: Free

Example 325

Structure



Crystalline form: Colorless prisms

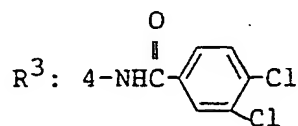
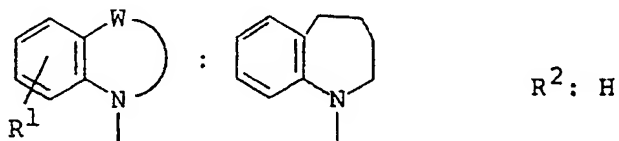
Recrystallization solvent: Ethanol

Melting Point: 223 - 225°C

Form: Free

Example 326

Structure



Crystalline form: Colorless prisms

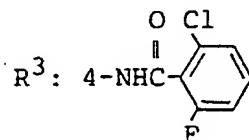
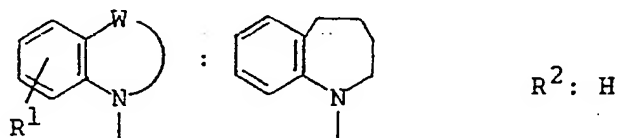
Recrystallization solvent: Methanol

Melting Point: 213 - 214°C

Form: Free

Example 327

Structure



Crystalline form: Colorless prisms

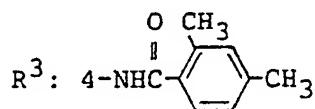
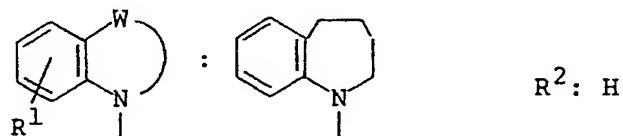
Recrystallization solvent: Ethanol

Melting Point: 246 - 247°C

Form: Free

Example 328

Structure



Crystalline form: Colorless prisms

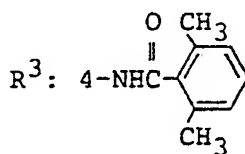
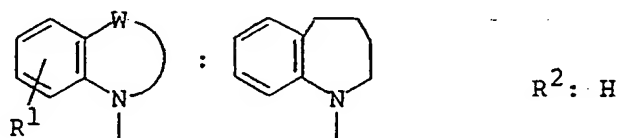
Recrystallization solvent: Methanol

Melting Point: 248 - 251°C

Form: Free

Example 329

Structure



Crystalline form: Colorless prisms

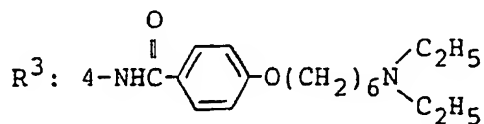
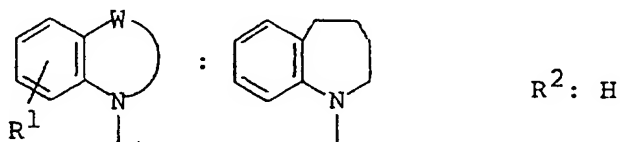
Recrystallization solvent: Ethanol

Melting Point: 268.5 - 270.5°C

Form: Free

Example 330

Structure



Crystalline form: White powder

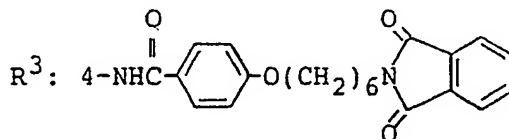
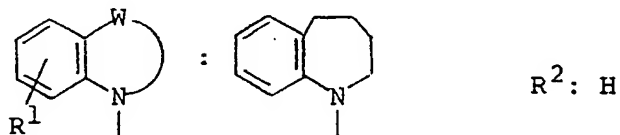
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 174 - 176°C

Form: Hydrochloride

Example 331

Structure



Crystalline form: White powder

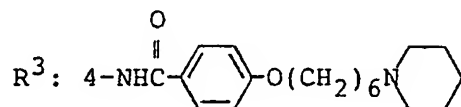
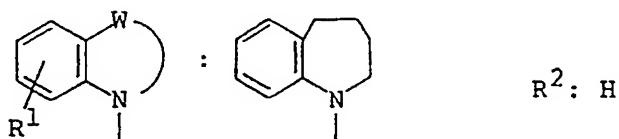
Recrystallization solvent: Ethanol

Melting Point: 130 - 134°C

Form: Free

Example 332

Structure



Crystalline form: White powder

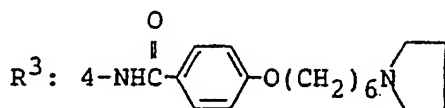
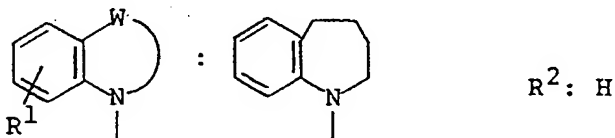
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 214 - 217°C

Form: Hydrochloride

Example 333

Structure



Crystalline form: White powder

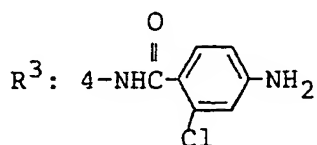
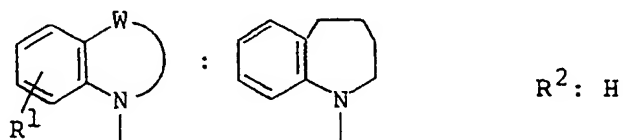
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 218 - 220°C

Form: Hydrochloride

Example 334

Structure



Crystalline form: White powder

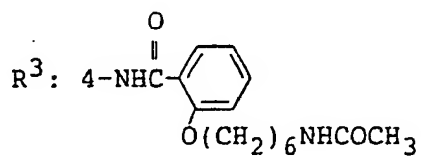
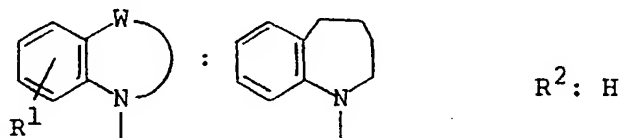
Recrystallization solvent: Ethyl acetate

Melting Point: 222 - 225°C

Form: Free

Example 335

Structure



Crystalline form: Colorless needles

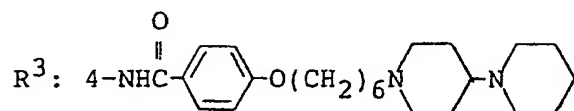
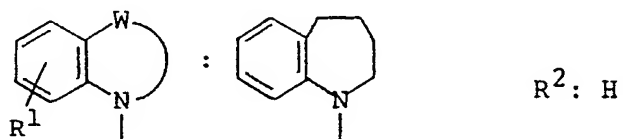
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 171 - 172°C

Form: Free

Example 336

Structure



Crystalline form: White powder

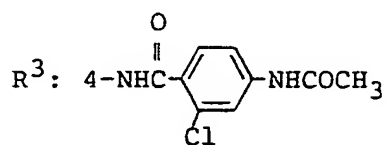
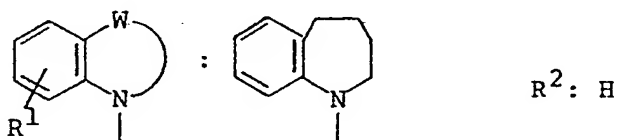
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 235.5 - 236°C

Form: Dihydrochloride

Example 337

Structure



Crystalline form: White powder

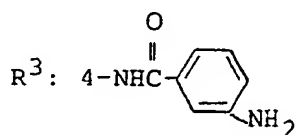
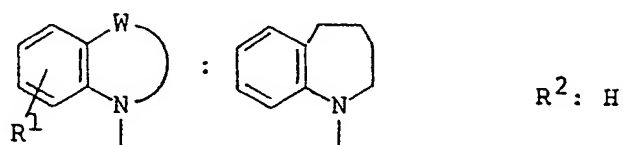
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 241 - 243°C

Form: Free

Example 338

Structure



Crystalline form: White powder

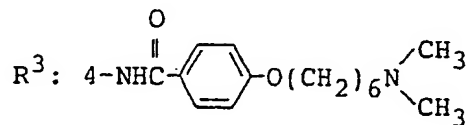
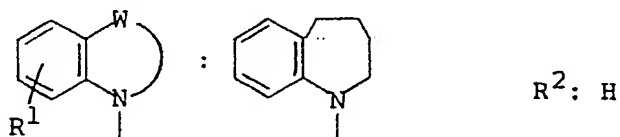
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 187 - 191°C

Form: Free

Example 339

Structure



Crystalline form: White powder

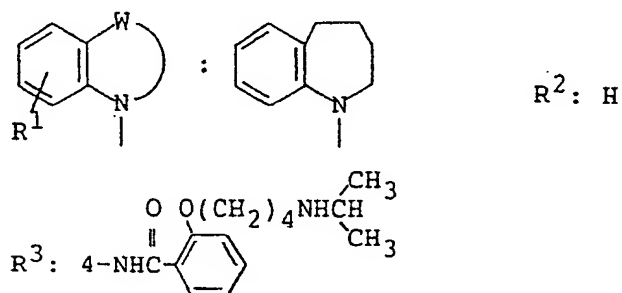
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 240 - 244°C

Form: Hydrochloride

Example 342

Structure



Crystalline form: White powder

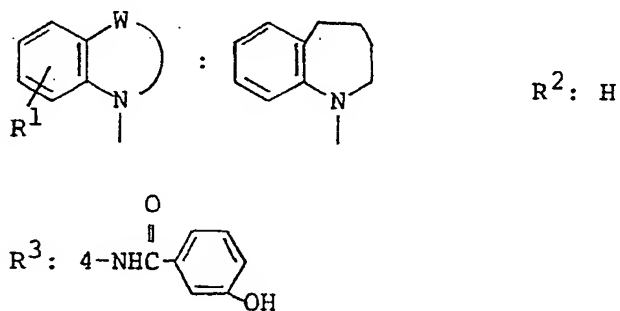
Recrystallization solvent: Isopropyl alcohol

Melting Point: 218 - 218.5°C

Form: Hydrochloride

Example 343

Structure



Crystalline form: White powder

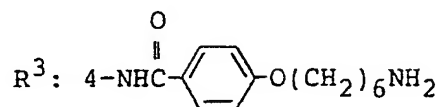
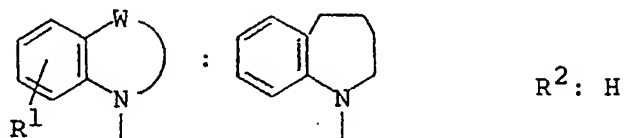
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 243 - 245.5°C

Form: Free

Example 344

Structure



Crystalline form: White powder

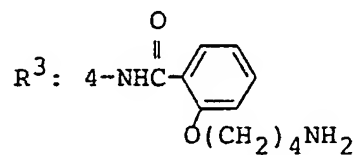
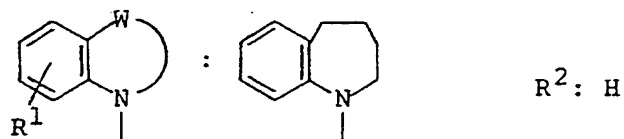
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 130 - 133°C

Form: Free

Example 345

Structure



Crystalline form: White powder

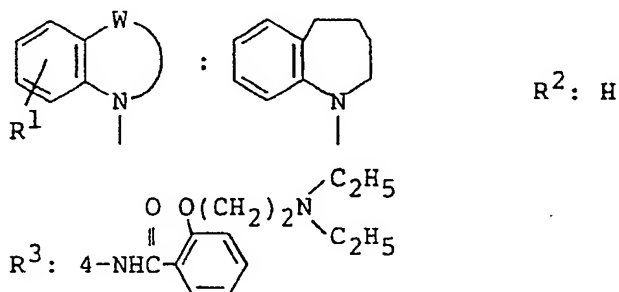
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 155 - 158°C

Form: Free

Example 346

Structure



Crystalline form: White powder

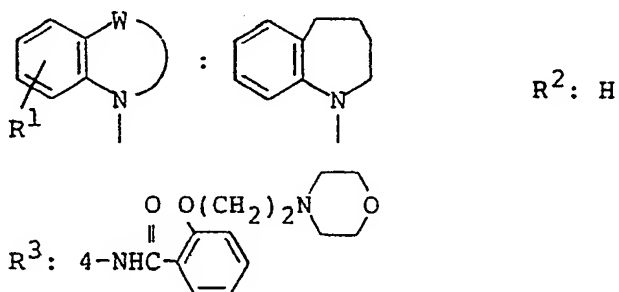
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 208 - 210°C

Form: Hydrochloride

Example 347

Structure



Crystalline form: Colorless prisms

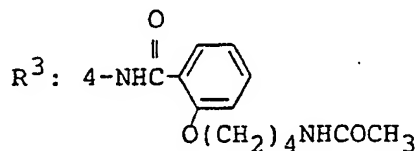
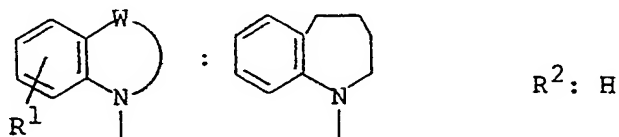
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 154 - 155°C

Form: Hydrochloride

Example 348

Structure



Crystalline form: White powder

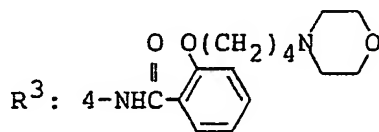
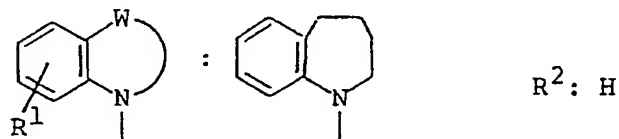
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 142 - 143°C

Form: Free

Example 349

Structure



Crystalline form: White powder

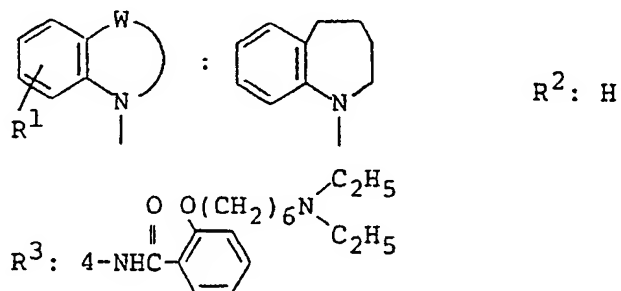
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 120 - 125°C

Form: Hydrochloride

Example 350

Structure



Crystalline form: White powder

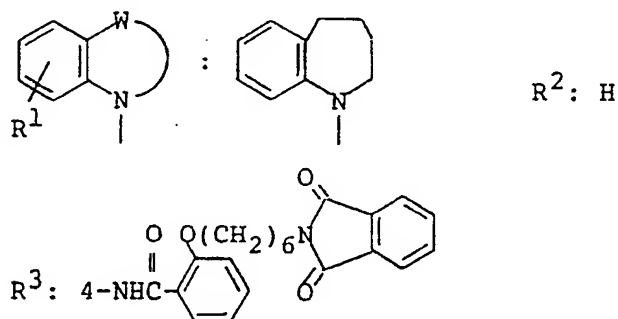
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 91 - 95°C

Form: Hydrochloride

Example 351

Structure



Crystalline form: White powder

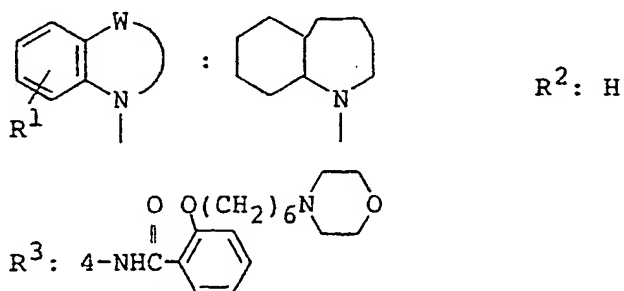
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 145 - 146.5°C

Form: Free

Example 352

Structure



Crystalline form: White powder

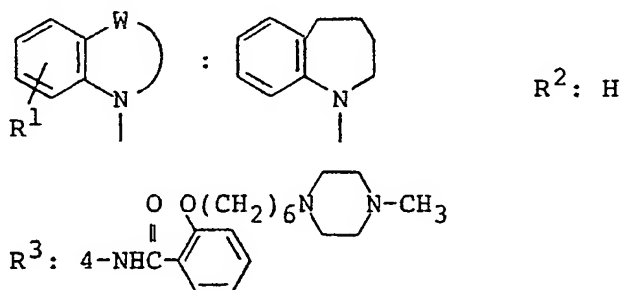
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 105 - 105.5°C

Form: Free

Example 353

Structure



Crystalline form: White powder

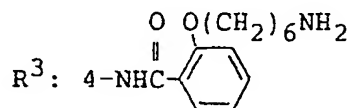
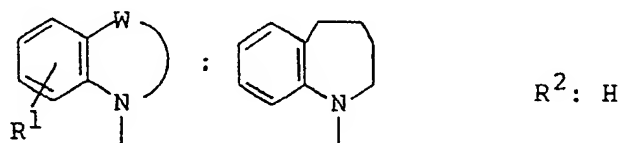
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 151 - 155°C

Form: Dihydrochloride

Example 354

Structure



Crystalline form: White powder

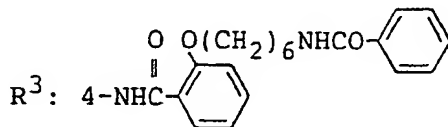
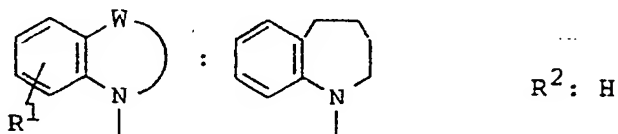
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 135.5 - 137.5°C

Form: Free

Example 355

Structure



Crystalline form: White powder

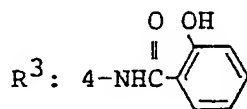
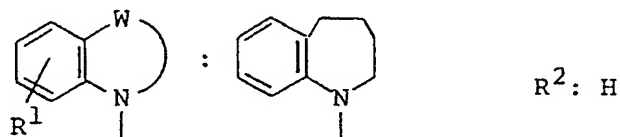
Recrystallization solvent: Ethanol

Melting Point: 178 - 178.5°C

Form: Free

Example 356

Structure



Crystalline form: White powder

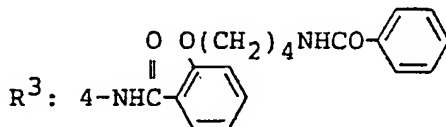
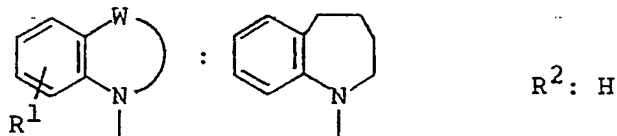
Recrystallization solvent: Dichloromethane

Melting Point: 266.5 - 268°C

Form: Free

Example 357

Structure



Crystalline form: White powder

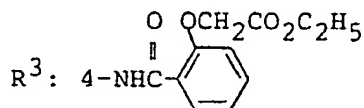
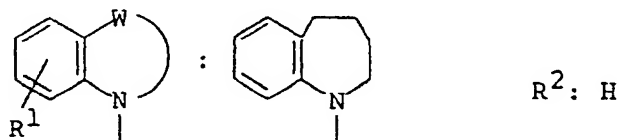
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 123 - 124°C

Form: Free

Example 358

Structure



Crystalline form: White powder

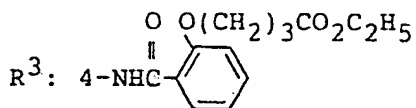
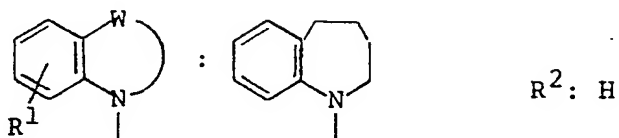
Recrystallization solvent: Ethyl acetate

Melting Point: 212 - 213.5°C

Form: Free

Example 359

Structure



Crystalline form: Colorless scales

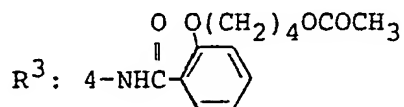
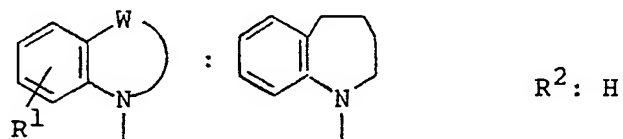
Recrystallization solvent: Ethyl acetate

Melting Point: 160.5 - 162°C

Form: Free

Example 360

Structure



Crystalline form: Colorless needles

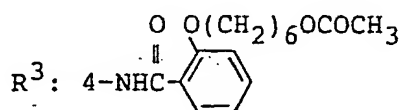
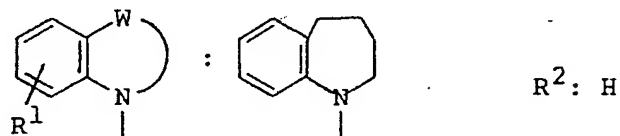
Recrystallization solvent: Ethanol

Melting Point: 103 - 105°C

Form: Free

Example 361

Structure



Crystalline form: White powder

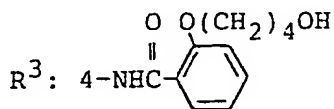
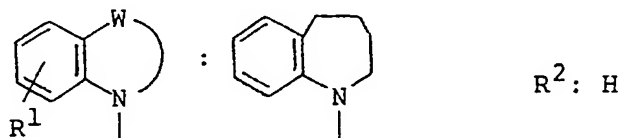
Recrystallization solvent: Ethanol

Melting Point: 145 - 146°C

Form: Free

Example 364

Structure



Crystalline form: White powder

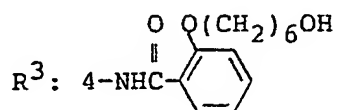
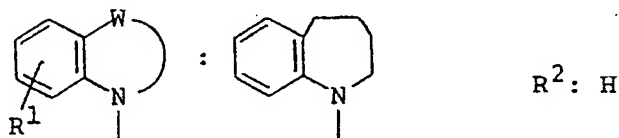
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 181.5 - 182.5°C

Form: Free

Example 365

Structure



Crystalline form: White powder

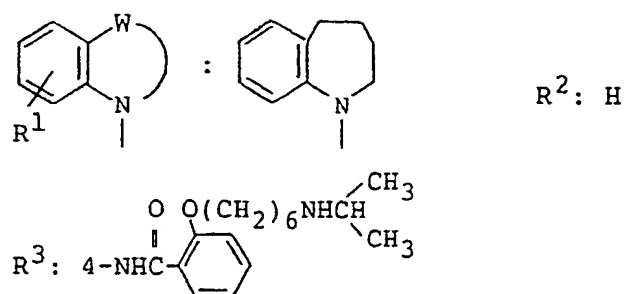
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 170 - 170.5°C

Form: Free

Example 366

Structure



Crystalline form: White powder

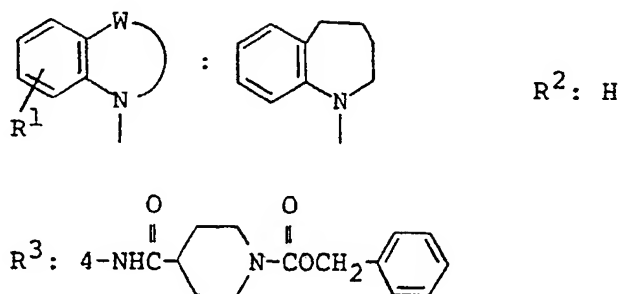
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 156 - 158°C

Form: Hydrochloride

Example 367

Structure



Crystalline form: White powder

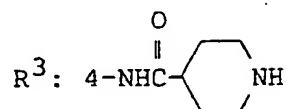
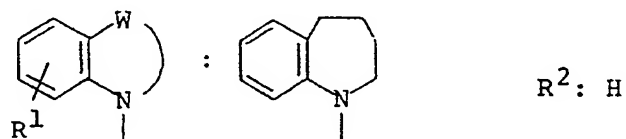
Recrystallization solvent: Diethyl ether

Melting Point: 168.5 - 170.5°C

Form: Free

Example 368

Structure



Crystalline form: White powder

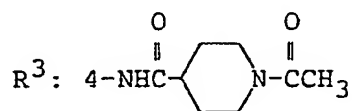
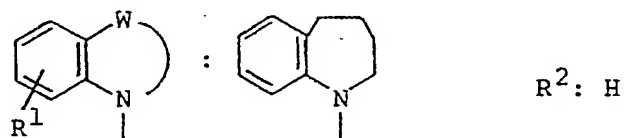
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 177 - 181.5°C

Form: Hydrochloride

Example 369

Structure



Crystalline form: White powder

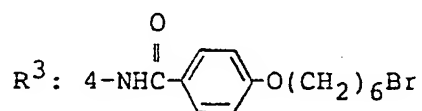
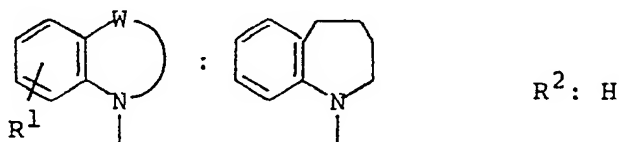
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 211 - 213°C

Form: Free

Example 370

Structure



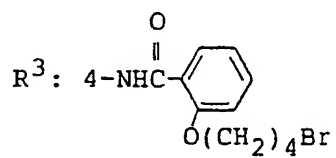
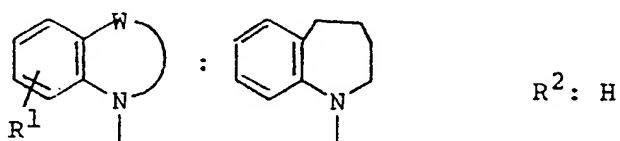
Crystalline form: White powder

NMR analysis: 46)

Form: Free

Example 371

Structure



Crystalline form: White powder

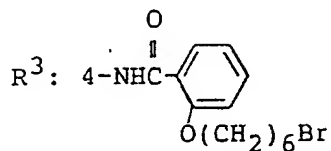
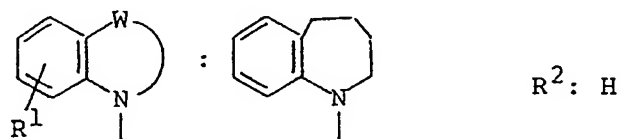
Recrystallization solvent: Methanol/ethyl acetate

Melting Point: 166 - 167°C

Form: Free

Example 372

Structure



Crystalline form: White powder

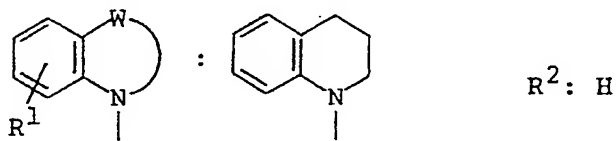
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 127 - 131°C

Form: Free

Example 373

Structure



Crystalline form: White powder

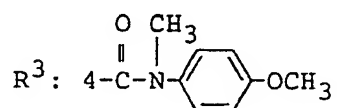
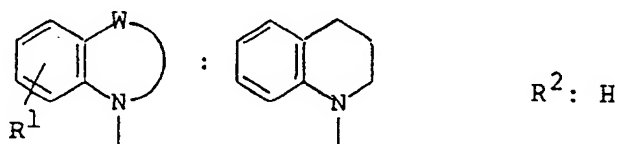
Recrystallization solvent: Methanol

Melting Point: 170 - 171°C

Form: Free

Example 374

Structure



Crystalline form: White powder

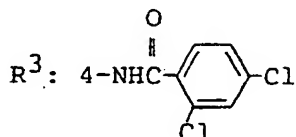
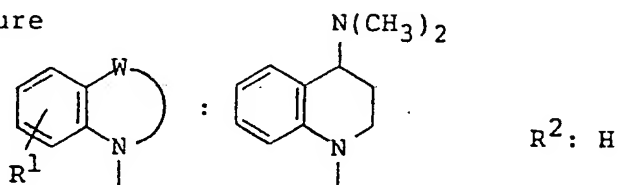
Recrystallization solvent: Methanol

Melting Point: 125 - 126°C

Form: Free

Example 375

Structure



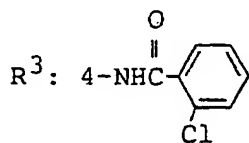
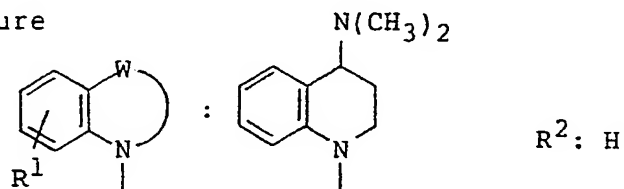
Crystalline form: Light yellow amorphous

NMR analysis: 47)

Form: Hydrochloride

Example 376

Structure



Crystalline form: Colorless amorphous

NMR analysis: 48)

Form: Hydrochloride

- 1) ^1H -NMR (CDCl_3) δ : 1.92 (1H, t, $J=6.2$ Hz), 1.98 (1H, t, $J=6.4$ Hz), 2.8 (2H, t, $J=6.4$ Hz), 3.76 (2H, t, $J=6.2$ Hz), 6.75 (1H, d, $J=7.6$ Hz), 6.86 (2H, d, $J=8.6$ Hz), 6.8-7.1 (2H, m), 7.20 (1H, d, $J=7$ Hz), 7.30 (2H, d, $J=8.6$ Hz), 7.72 (2H, d, $J=8.6$ Hz), 7.84 (2H, d, $J=8.6$ Hz), 10.13 (1H, s)
- 2) ^1H -NMR ($\text{DMSO}-d_6$) δ : 2.05 (2H, quint, $J=6.4$ Hz), 2.91 (2H, t, $J=6.4$ Hz), 3.86 (2H, t, $J=6.4$ Hz), 6.85 (1H, d, $J=7.6$ Hz), 6.9-7.2 (2H, m), 7.30 (1H, d, $J=7.2$ Hz), 7.44 (2H, d, $J=8.5$ Hz), 7.85 (2H, d, $J=8.5$ Hz), 8.1-8.2 (4H, m), 10.65 (1H, s), 13.2-13.4 (1H, br)
- 3) ^1H -NMR (CDCl_3) δ : 1.9-2.1 (2H, m), 2.84 (2H, t, $J=6.5$ Hz), 3.82 (6H, s), 3.90 (2H, t, $J=6.6$ Hz), 6.5-7.2 (7H, m), 7.35 (2H, d, $J=8.7$ Hz), 7.55 (2H, d, $J=8.7$ Hz), 8.05 (1H, s)
- 4) ^1H -NMR (CDCl_3) δ : 1.9-2.1 (2H, m), 2.37 (6H, s), 2.84 (2H, t, $J=6.6$ Hz), 3.90 (2H, t, $J=6.6$ Hz), 6.71 (1H, d, $J=7.9$ Hz), 6.8-7.2 (4H, m), 7.35 (2H, d, $J=8.6$ Hz), 7.44 (2H, s), 7.56 (2H, d, $J=8.6$ Hz), 8.00 (1H, s)
- 5) ^1H -NMR (CDCl_3) δ : 1.9-2.2 (2H, m), 2.12 (3H, s), 2.84 (2H, t, $J=6.6$ Hz), 3.89 (2H, t, $J=6.5$ Hz), 6.71 (1H, d, $J=7.8$ Hz), 6.87 (1H, t, $J=7$ Hz), 6.99 (1H, t, $J=7.3$ Hz), 7.15 (1H, d, $J=6.5$ Hz), 7.28 (2H, d, $J=8.6$ Hz), 7.41 (2H, d, $J=8.6$ Hz), 8.03

- (1H, s)
- 6) $^1\text{H-NMR}$ (CDCl_3) δ : 0.8-1.3 (6H, m), 1.6-2.3 (9H, m), 2.83 (2H, t, $J=6.6$ Hz), 3.89 (2H, t, $J=6.5$ Hz), 6.72 (1H, d, $J=7.9$ Hz), 6.8-7.1 (2H, m), 7.15 (1H, d, $J=7.4$ Hz), 7.28 (2H, d, $J=8.3$ Hz), 7.44 (2H, d, $J=8.4$ Hz), 7.9-8.1 (1H, m)
- 7) $^1\text{H-NMR}$ (CDCl_3) δ : 2.02 (2H, quint, $J=6.5$ Hz), 2.81 (2H, t, $J=6.6$ Hz), 3.69 (2H, s), 3.87 (2H, t, $J=6.6$ Hz), 6.66 (1H, d, $J=8.2$ Hz), 6.8-7.0 (2H, m), 7.13 (1H, d, $J=7.3$ Hz), 7.2-7.4 (9H, m), 7.59 (1H, s)
- 8) $^1\text{H-NMR}$ (CDCl_3) δ : 1.7-2.1 (17H, m), 2.83 (2H, t, $J=6.7$ Hz), 3.90 (2H, t, $J=6.6$ Hz), 6.68 (1H, d, $J=8.1$ Hz), 6.8-7.1 (2H, m), 7.14 (1H, d, $J=7$ Hz), 7.32 (2H, d, $J=8.7$ Hz), 7.39 (1H, s), 7.46 (2H, d, $J=8.7$ Hz)
- 9) $^1\text{H-NMR}$ (CDCl_3) δ : 1.99 (2H, quint, $J=6.5$ Hz), 2.82 (2H, t, $J=6.6$ Hz), 3.82 (2H, t, $J=6.5$ Hz), 6.8-7.1 (4H, m), 7.1-7.3 (2H, m), 7.4-7.6 (3H, m), 7.67 (1H, s), 7.8-8.0 (3H, m), 8.42 (1H, s)
- 10) $^1\text{H-NMR}$ (CDCl_3) δ : 2.00 (2H, quint, $J=6.5$ Hz), 2.83 (2H, t, $J=6.6$ Hz), 3.85 (2H, t, $J=6.6$ Hz), 3.86 (3H, s), 6.8-7.1 (6H, m), 7.1-7.3 (2H, m), 7.64 (1H, s), 7.8-8.0 (3H, m), 8.22 (1H, s)
- 11) $^1\text{H-NMR}$ (CDCl_3) δ : 1.98 (2H, quint, $J=6.5$ Hz), 2.82 (2H, t, $J=6.5$ Hz), 3.81 (2H, t, $J=6.5$ Hz),

- 3.84 (3H, s), 6.8-7.5 (10H, m), 7.68 (1H, s), 7.95 (1H, d, J=8.2 Hz), 8.52 (1H, s)
- 12) $^1\text{H-NMR}$ (CDCl_3) δ : 1.7-1.9 (2H, m), 2.70 (2H, t, J=6.6 Hz), 3.70 (2H, t, J=6.4 Hz), 6.8-7.3 (6H, m), 7.4-7.7 (2H, m), 7.8-7.9 (5H, m), 8.04 (1H, d, J=8 Hz), 8.33 (1H, s), 8.90 (1H, s)
- 13) $^1\text{H-NMR}$ (CDCl_3) δ : 1.7-2.1 (17H, m), 2.84 (2H, t, J=6.5 Hz), 3.89 (2H, t, J=6.4 Hz), 6.8-7.2 (6H, m), 7.42 (1H, s), 7.56 (1H, s), 7.81 (1H, d, J=8.1 Hz)
- 14) $^1\text{H-NMR}$ (DMSO-d_6) δ : 1.0-1.5 (5H, m), 1.5-2.0 (5H, m), 2.2-3.8 (8H, m), 4.2-5.2 (3H, m), 6.77 (1H, d, J=7.2 Hz), 7.1-7.4 (4H, m), 7.47 (2H, d, J=8.6 Hz), 7.58 (1H, d, J=6.2 Hz), 10.06 (1H, s), 10.9-12.1 (1H, br)
- 15) $^1\text{H-NMR}$ (DMSO-d_6) δ : 2.5-3.8 (6H, m), 4.2-5.2 (3H, m), 6.81 (1H, d, J=6.8 Hz), 7.1-7.3 (4H, m), 7.5-7.7 (3H, m), 7.8-8.0 (1H, m), 7.97 (2H, d, J=1.8 Hz), 10.66 (1H, s), 11.1-12.3 (1H, br)
- 16) $^1\text{H-NMR}$ (DMSO-d_6) δ : 2.20 (3H, s), 2.27 (3H, s), 2.5-3.8 (6H, m), 4.3-5.3 (3H, m), 6.82 (1H, d, J=7.2 Hz), 7.1-7.4 (7H, m), 7.5-7.8 (3H, m), 10.43 (1H, s), 11.0-12.2 (1H, br)
- 17) $^1\text{H-NMR}$ (DMCO-d_6) δ : 2.34 (3H, s), 2.5-3.7 (6H, m), 4.3-5.2 (3H, m), 6.82 (1H, d, J=6.8 Hz), 7.2-7.7 (11H, m), 10.41 (1H, s), 10.8-12.3 (1H, br)
- 18) $^1\text{H-NMR}$ (DMSO-d_6) δ : 2.38 (3H, s), 2.5-3.8 (6H, m),

- 4.3-5.3 (3H, m), 6.81 (1H, d, J=7.0 Hz), 7.1-7.5 (6H, m), 7.5-7.8 (5H, m), 10.35 (1H, s), 10.9-12.2 (1H, br)
- 19) $^1\text{H-NMR}$ (DMSO- d_6) δ : 2.37 (3H, s), 2.5-3.7 (6H, m), 4.3-5.2 (3H, m), 6.81 (1H, d, J=7.2 Hz), 7.2-7.4 (6H, m), 7.5-7.7 (3H, m), 7.84 (2H, d, J=8.0 Hz), 10.31 (1H, s), 10.9-12.2 (1H, br)
- 20) $^1\text{H-NMR}$ (DMSO- d_6) δ : 2.5-3.8 (6H, m), 4.3-5.2 (3H, m), 6.82 (1H, d, J=7.4 Hz), 7.2-7.3 (4H, m), 7.5-7.8 (5H, m), 7.75 (1H, d, J=1.8 Hz), 10.70 (1H, s), 10.8-12.2 (1H, br)
- 21) $^1\text{H-NMR}$ (DMSO- d_6) δ : 2.5-3.8 (9H, m), 4.3-4.7 (1H, m), 4.7-5.1 (2H, m), 6.8-7.1 (3H, m), 7.1-7.4 (2H, m), 7.5-7.7 (2H, m), 7.8-8.0 (3H, m), 9.79 (1H, s), 10.8-12.2 (1H, br)
- 22) $^1\text{H-NMR}$ (DMSO- d_6) δ : 0.8-1.2 (3H, m), 1.7-2.2 (2H, m), 2.5-3.8 (5H, m), 4.3-5.2 (3H, m), 6.80 (1H, d, J=7.2 Hz), 7.1-7.3 (4H, m), 7.6-7.7 (3H, m), 7.85 (1H, s), 7.96 (2H, d, J=1.8 Hz), 10.62 (1H, s), 10.8-12.0 (1H, br)
- 23) $^1\text{H-NMR}$ (DMSO- d_6) δ : 0.8-1.1 (3H, m), 1.7-2.1 (2H, m), 2.37 (3H, s), 2.7-3.8 (5H, m), 4.4-5.2 (3H, m), 6.81 (1H, d, J=7.6 Hz), 7.2-7.4 (6H, m), 7.6-7.7 (3H, m), 7.84 (2H, d, J=8.2 Hz), 10.29 (1H, s), 10.5-11.8 (1H, br)
- 24) $^1\text{H-NMR}$ (DMSO- d_6) δ : 0.8-1.2 (3H, m), 1.7-2.1 (2H,

- m), 2.38 (3H, s), 2.6-3.8 (5H, m), 4.3-5.2 (3H, m), 6.81 (1H, d, J=7.0 Hz), 7.2-7.5 (6H, m), 7.6-7.8 (5H, m), 10.33 (1H, s), 10.5-11.7 (1H, br)
- 25) ^1H -NMR (DMSO- d_6) δ : 0.8-1.2 (3H, m), 1.7-2.1 (2H, m), 2.6-3.8 (5H, m), 3.8-5.2 (3H, m), 6.82 (1H, d, J=7.2 Hz), 7.1-7.5 (8H, m), 7.5-7.7 (3H, m), 10.42 (1H, s), 10.7-12.0 (1H, br)
- 26) ^1H -NMR (DMSO- d_6) δ : 0.8-2.0 (15H, m), 2.2-2.5 (1H, m), 2.6-3.7 (5H, m), 4.3-5.2 (3H, m), 6.76 (1H, d, J=7.0 Hz), 7.1-7.4 (4H, m), 7.46 (2H, d, J=8.6 Hz), 7.61 (1H, d, J=6.4 Hz), 10.03 (1H, s), 10.5-11.8 (1H, br)
- 27) ^1H -NMR (DMSO- d_6) δ : 0.8-1.1 (3H, m), 1.7-2.0 (2H, m), 2.20 (3H, s), 2.29 (3H, s), 2.6-3.7 (5H, m), 4.3-5.2 (3H, m), 6.82 (1H, d, J=7.0 Hz), 7.2-7.4 (7H, m), 7.5-7.7 (3H, m), 10.41 (1H, s), 10.6-12.0 (1H, br)
- 28) ^1H -NMR (CDCl_3) δ : 1.21 (3H, t, J=7.1 Hz), 3.00-3.25 (3H, m), 4.00-4.30 (4H, m), 6.63 (1H, d, J=7.8 Hz), 6.86 (1H, t, J=7.3 Hz), 7.00 (1H, t, J=6.3 Hz), 7.10-7.31 (3H, m), 7.40-7.57 (3H, m), 7.77 (2H, d, J=1.9 Hz), 8.76 (1H, brs)
- 29) ^1H -NMR (CDCl_3) δ : 2.29 (3H, s), 2.32 (3H, s), 2.34 (3H, s), 2.50-3.15 (11H, m), 3.79 (1H, dd, J=13.2 Hz, 7.3 Hz), 4.05 (1H, dd, J=13.2 Hz, 5.7 Hz), 6.62 (1H, d, J=7.7 Hz), 6.82-7.48 (8H, m), 7.53 (2H, d,

J=8.4 Hz), 8.05 (1H, brs)

- 30) $^1\text{H-NMR}$ (CDCl_3) δ : 1.65-2.01 (4H, m), 2.31 (3H, s), 2.35 (3H, s), 2.55-3.02 (6H, m), 3.09 (1H, dd, J=15 Hz, 5 Hz), 3.70 (1H, dd, J=12.5 Hz, 8.0 Hz), 4.22 (1H, dd, J=12.5 Hz, 5 Hz), 6.67 (1H, d, J=7.8 Hz), 6.80-7.32 (7H, m), 7.37 (2H, d, J=8.6 Hz), 7.53 (1H, d, J=8.3 Hz), 7.66 (1H, brs)
- 31) $^1\text{H-NMR}$ (CDCl_3) δ : 2.80 (1H, dd, J=16.1 Hz, 5.3 Hz), 3.16 (1H, dd, J=15.8 Hz, 5.3 Hz), 3.75-4.50 (3H, m), 4.87-5.10 (3H, m), 6.80-7.60 (14H, m), 7.74 (2H, d, J=1.9 Hz), 8.47 (1H, brs)
- 32) $^1\text{H-NMR}$ (CDCl_3) δ : 2.35 (6H, s), 2.72-3.10 (3H, m), 3.65-3.78 (1H, m), 4.06-4.18 (1H, m), 6.60-7.62 (9H, m), 7.74 (2H, d, J=1.8 Hz), 8.52 (1H, brs)
- 33) $^1\text{H-NMR}$ (CDCl_3) δ : 1.87 (3H, s), 2.68 (1H, dd, J=5.6 Hz, 16 Hz), 3.14 (1H, dd, J=5.6 Hz, 16 Hz), 3.70-3.95 (2H, m), 4.32-4.50 (1H, m), 6.29 (1H, d, J=7.6 Hz), 6.90-7.80 (11H, m), 9.16 (1H, brs)
- 34) $^1\text{H-NMR}$ (CDCl_3) δ : 1.62 (1H, brs), 1.90-2.25 (2H, m), 2.55 (3H, s), 3.78 (1H, t, J=5.1 Hz), 3.95 (2H, t, J=6.7 Hz), 6.69 (1H, t, J=7.9 Hz), 6.90-7.13 (2H, m), 7.23-7.40 (3H, m), 7.42-7.56 (3H, m), 7.77 (2H, d, J=1.9 Hz), 8.53 (1H, brs)
- 35) $^1\text{H-NMR}$ (CDCl_3) δ : 1.80-2.02 (1H, m), 2.20-2.35 (1H, m), 2.31 (6H, s), 3.52 (1H, t, J=5.4 Hz), 3.68-3.83 (1H, m), 3.95-4.15 (1H, m), 6.59 (1H, d,

- J=7.8 Hz), 6.81-7.10 (2H, m), 7.16-7.50 (6H, m),
7.80 (2H, d, J=1.8 Hz), 9.13 (1H, brs)
- 36) $^1\text{H-NMR}$ (CDCl_3) δ : 1.35-1.60 (1H, m), 1.65-2.20
(3H, m), 2.65-3.20 (5H, m), 3.81 (2H, d, J=6.5 Hz),
4.90-5.10 (1H, m), 6.60 (1H, d, J=8.0 Hz), 6.90
(1H, t, J=8.0 Hz), 7.00-7.50 (6H, m)
- 37) $^1\text{H-NMR}$ (CDCl_3) δ : 1.30-2.25 (4H, m), 2.55-3.20
(3H, m), 3.35 (2H, s), 3.80 (2H, s), 4.90-5.10 (1H,
m), 6.62 (1H, d, J=8.0 Hz), 6.85-7.45 (12H, m),
9.27 (1H, brs)
- 38) $^1\text{H-NMR}$ (CDCl_3) δ : 1.35-2.25 (4H, m), 2.33 (3H, s),
2.60-3.20 (3H, m), 3.12 (2H, s), 3.61 (2H, s), 5.00
(1H, brs), 6.50-7.60 (13H, m), 9.14 (1H, brs)
- 39) $^1\text{H-NMR}$ (CDCl_3) δ : 1.27 (3H, t, J=7.1 Hz), 1.25-
2.50 (12H, m), 2.70-3.10 (4H, m), 3.05 (2H, s),
4.15 (2H, q, J=7.0 Hz), 4.90-5.10 (1H, m), 6.63
(1H, d, J=7.5 Hz), 6.91 (1H, t, J=7.5 Hz), 7.00-
7.50 (6H, m), 9.14 (1H, brs)
- 40) $^1\text{H-NMR}$ (CDCl_3) δ : 1.30-1.65 (1H, m), 1.80-2.25
(5H, m), 2.70-3.20 (3H, m), 4.01 (2H, d, J=5.0 Hz),
4.90-5.10 (1H, m), 6.61 (1H, d, J=7.7 Hz), 6.89
(1H, t, J=7.0 Hz), 7.00-7.45 (6H, m), 9.05 (1H,
brs)
- 41) $^1\text{H-NMR}$ (CDCl_3) δ : 1.18 (6H, s), 1.30-2.20 (4H, m),
2.60-3.20 (3H, m), 3.30 (2H, s), 3.73 (2H, s),
4.90-5.10 (1H, m), 6.61 (1H, d, J=7.3 Hz), 6.70-

- 7.45 (12H, m), 9.50 (1H, brs)
- 42) $^1\text{H-NMR}$ (CDCl_3) δ : 1.19 (3H, t, $J=7.0$ Hz), 1.30-1.70 (1H, m), 1.75-2.20 (3H, m), 2.65-3.15 (3H, m), 3.46 (2H, q, $J=7.0$ Hz), 3.88 (2H, s), 4.90-5.10 (1H, m), 6.55-7.45 (13H, m), 8.36 (1H, brs)
- 43) $^1\text{H-NMR}$ (CDCl_3) δ : 1.08 (3H, t, $J=7.2$ Hz), 1.05-2.25 (14H, m), 2.25-3.25 (10H, m), 4.90-5.10 (1H, m), 6.64 (1H, d, $J=7.6$ Hz), 6.90 (1H, t, $J=7.2$ Hz), 6.94-7.50 (6H, m), 11.50 (1H, brs)
- 44) $^1\text{H-NMR}$ (CDCl_3) δ : 1.06 (3H, t, $J=7.5$ Hz), 1.30-2.20 (6H, m), 2.60-3.20 (3H, m), 3.65 (1H, m), 3.95 (1H, brs), 4.90-5.10 (1H, m), 6.50-6.75 (3H, m), 6.75-7.05 (2H, m), 7.05-7.55 (8H, m), 8.67 (1H, brs)
- 45) $^1\text{H-NMR}$ (DMSO-d_6) δ : 1.28-1.57 (1H, m), 1.69-2.20 (3H, m), 2.59-3.15 (3H, m), 4.74-4.98 (1H, m), 6.62-6.80 (1H, m), 6.86-7.37 (5H, m), 7.50-7.70 (2H, m), 8.95-9.02 (1H, m), 9.03-9.15 (2H, m), 10.85 (1H, s)
- 46) $^1\text{H-NMR}$ (CDCl_3) δ : 1.40-1.66 (5H, m), 1.72-2.20 (7H, m), 2.63-3.18 (3H, m), 3.42 (2H, t, $J=6.7$ Hz), 4.00 (2H, t, $J=6.3$ Hz), 4.91-5.13 (1H, m), 6.58-6.72 (1H, m), 6.82-7.00 (3H, m), 7.02-7.30 (4H, m), 7.36-7.51 (2H, m), 7.70-7.88 (2H, m), 7.91 (1H, s)
- 47) $^1\text{H-NMR}$ (DMSO-d_6) δ : 2.05-2.95 (8H, m), 3.43-3.70 (1H, m), 4.08-4.30 (1H, m), 4.72-5.00 (1H, m),

6.70-8.08 (11H, m), 10.8 (1H, s), 11.1 (1H, brs)
48) $^1\text{H-NMR}$ (DMSO-d_6) δ : 2.10-3.00 (8H, m), 3.47-3.70
(1H, m), 4.07-4.33 (1H, m), 4.75-4.98 (1H, m),
6.78-6.91 (1H, m), 7.05-7.22 (2H, m), 7.30-7.97
(9H, m), 10.75 (1H, s), 10.94 (1H, brs)

Example 377

To a solution of 1-[4-(4-formylbenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline (0.3 g) in methanol (10 ml) is added gradually sodium borohydride (59 mg) under ice-cooling and the mixture is stirred at room temperature for 2 hours. Water is added to the mixture and the solvent is distilled off under reduced pressure. The resulting residue is extracted with dichloromethane, washed with water, and dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from methanol to give 1-[4-(4-hydroxymethylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (165 mg) as white powder, m.p. 224.5 - 225.5°C.

Using the suitable starting materials, the compound of the above Example 37 is obtained in the same manner as in Example 377.

Example 378

To a solution of 1-[4-(4-methoxycarbonylbenzoyl)-

amino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.5 g) in methanol (20 ml) is added 5 % aqueous sodium hydroxide solution (10 ml) and the mixture is stirred at room temperature overnight. Methanol is distilled off under reduced pressure and the resulting residue is acidified with diluted aqueous hydrochloric acid solution. The precipitated crystal is collected by filtration to give 1-[4-(4-carboxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.4 g) as white powder, m.p. >300°C.

$^1\text{H-NMR}$ (DMSO- d_6) δ : 2.05 (2H, quint, $J=6.4$ Hz), 2.91 (2H, t, $J=6.4$ Hz), 3.86 (2H, t, $J=6.4$ Hz), 6.85 (1H, d, $J=7.6$ Hz), 6.9-7.2 (2H, m), 7.30 (1H, d, $J=7.2$ Hz), 7.44 (2H, d, $J=8.5$ Hz), 7.85 (2H, d, $J=8.5$ Hz), 8.1-8.2 (4H, m), 10.65 (1H, s), 13.2-13.4 (1H, br)

Using the suitable starting materials, the compounds of the above Examples 39, 241, 252, 253 and 362 are obtained in the same manner as in Example 378.

Example 379

To a solution of 1-[4-(3-acetyloxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (1.5 g) in methanol (20 ml) is added 5 % aqueous sodium hydroxide solution (10 ml) and the mixture is stirred at room temperature overnight. Methanol is distilled off under reduced pressure and the resulting residue is acidified with diluted aqueous hydrochloric acid solution. The precipitated crystal is collected by filtration and recrystallized from methanol to

give 1-[4-(3-hydroxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (1.22 g) as white powder, m.p. 217 - 218°C.

Using the suitable starting materials, the compounds of the above Examples 10, 343, 356, 364 and 365 are obtained in the same manner as in Example 379.

Example 380

To a solution of 1-[4-(3-hydroxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.4 g) in acetone (5 ml) are added potassium carbonate (0.22 g) and ethyl iodide (0.34 g), and the mixture is refluxed for 5 hours. Then, acetone is distilled off under reduced pressure and water is added to the residue. The precipitated crystal is collected by filtration, and recrystallized from methanol to give 1-[4-(3-ethoxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.36 g) as white powder, m.p. 170.5 - 171.5°C.

Using the suitable starting materials, the compounds of the above Examples 11, 12, 13, 14, 33, 35, 48, 50 - 55, 90 - 92, 97 - 100, 109 - 111, 120 - 122, 136 - 138, 165 - 167, 175 - 177, 192 - 194, 211, 212, 214, 321, 322, 330 - 333, 335, 336, 339 - 342, 344 - 355, 357 - 366 and 370 - 374 are obtained in the same manner as in Example 380.

Example 381

Ethanol (50 ml) is added to 10 % Pd-C (0.1 g) and thereto is added 1-[4-(3-nitrobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.73 g). The mixture is subjected to

catalytic reduction at ordinary temperature under atmospheric pressure of hydrogen. After completion of the reduction, 10 % Pd-C is removed by filtration and the filtrate is concentrated under reduced pressure. The residue is extracted with dichloromethane and the extract is dried over magnesium sulfate. The solvent is distilled off under reduced pressure and recrystallized from methanol to give 1-[4-(3-aminobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.54 g) as white powder, m.p. 205.5 - 206.5°C.

Using the suitable starting materials, the compounds of the above Examples 24, 334 and 338 are obtained in the same manner as in Example 381.

Example 382

To a solution of 1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline (0.5 g) in dichloromethane (20 ml) is added triethylamine (0.3 g), and thereto is added benzoyl chloride (0.28 g) under ice-cooling. The mixture is stirred at room temperature for 1 hour. To the reaction mixture is added water and extracted with dichloromethane. The extract is dried over magnesium sulfate and the solvent is distilled off under reduced pressure. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1) and recrystallized from methanol to give 1-[4-(benzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (245 mg) as white powder, m.p. 202.5 - 203.5°C.

Using the suitable starting materials, the compounds of the above Examples 2 - 119, 131 - 373, 375 and 376 are obtained in the same manner as in Example 382.

Example 383

Thionyl chloride (10 ml) is added to 1-(4-carboxy-benzoyl)-1,2,3,4-tetrahydroquinoline (0.5 g) and the mixture is refluxed for 1 hour. Thionyl chloride is distilled off under reduced pressure to give 4-[1-(1,2,3,4-tetrahydro-quinolyl)carbonyl]benzoyl chloride. Separately, to a solution of m-anisidine (0.27 g) in dichloromethane (20 ml) is added triethylamine (0.34 g), and thereto is added gradually the above obtained 4-[1-(1,2,3,4-tetrahydro-quinolyl)carbonyl]benzoyl chloride under ice-cooling and the mixture is stirred at room temperature for 1 hour. Water is added to the reaction mixture and the mixture is extracted with dichloromethane. The extract is dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from methanol to give 1-[4-(3-methoxyanilinocarbonyl)benzoyl]-1,2,3,4-tetrahydroquinoline (203 mg) as colorless needles, m.p. 154 - 155°C.

Using the suitable starting materials, the compounds of the above Examples 120, 122 - 130 and 374 are obtained in the same manner as in Example 383.

Example 384

To 4-oxo-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.7 g) are added tetrahydrofuran (10 ml) and methanol (10 ml). To the mixture is added sodium borohydride (0.1 g) in portions and the mixture is stirred at room temperature for 1 hour. Water is added to the reaction mixture and the mixture is extracted with dichloromethane. The solvent is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 20 : 1), and recrystallized from ethanol to give 4-hydroxy-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.4 g) as white powder, m.p. 215 - 217°C.

Example 385

To 3-ethoxycarbonyl-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.6 g) are added an aqueous solution of sodium hydroxide (0.1 g) in water (1 ml) and ethanol (5 ml). The mixture is stirred at room temperature for 15 minutes, and acidified with diluted hydrochloric acid, extracted with dichloromethane. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 50 : 1), and recrystallized from ethanol to give 3-carboxy-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.4 g) as white powder, m.p. 221 - 223°C.

Example 386

To 3-carboxy-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline (3.7 g) are added tetrahydrofuran (50 ml) and thionyl chloride (5 ml). The mixture is reacted at 60°C for 1 hour. The reaction mixture is concentrated and to the residue is added acetone (20 ml). To the mixture is added dropwise a solution of sodium azide (1.0 g) in water (5 ml) under ice-cooling. The reaction mixture is stirred at the same temperature for 30 minutes and extracted with dichloromethane, dried over magnesium sulfate. The solvent is concentrated and to the resulting residue are added anhydrous toluene (30 ml) and benzyl alcohol (1.7 g). The mixture is refluxed for 1 hour. The reaction mixture is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 50 : 1) to give 3-benzyloxycarbonylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (3.7 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ : 2.80 (1H, dd, $J=16.1$ Hz, 5.3 Hz), 3.16 (1H, dd, $J=15.8$ Hz, 5.3 Hz), 3.75-4.50 (3H, m), 4.87-5.10 (3H, m), 6.80-7.60 (14H, m), 7.74 (2H, d, $J=1.9$ Hz), 8.47 (1H, brs)

Example 387

To 3-benzyloxycarbonylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (3.3 g)

are added acetic acid (40 ml) and 10 % Pd-C (0.4 g) and the reaction mixture is subjected to catalytic reduction at ordinary temperature under atmospheric pressure of hydrogen. One hour thereafter, the catalyst is removed by filtration and the filtrate is concentrated. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1), and recrystallized from ethanol to give 3-amino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (1.6 g) as white powder, m.p. 207 - 210°C.

Example 388

To 3-amino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.5 g) are added methanol (10 ml), 37 % formaline (0.8 ml) and sodium cyanoborohydride (0.16 g). To the mixture is added acetic acid (0.5 ml) under ice-cooling and the mixture is stirred at room temperature for 1 hour. Water is added to the reaction mixture and the mixture is basified with potassium carbonate and extracted with dichloromethane. The solvent is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 20 : 1) to give 3-dimethyl-amino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.3 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ : 2.35 (6H, s), 2.72-3.10 (3H, m), 3.65-3.78 (1H, m), 4.06-4.18 (1H, m), 6.60-7.62 (9H, m),

7.74 (2H, d, J=1.8 Hz), 8.52 (1H, brs)

Using the suitable starting materials, the compounds of the above Examples 246, 247, 375 and 376 are obtained in the same manner as in Example 388.

Example 389

To 3-amino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.44 g) are added dichloromethane (5 ml) and acetic anhydride (0.12 g) and the mixture is stirred for 1 hour. The reaction mixture is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 50 : 1) to give 3-acetylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.3 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ : 1.87 (3H, s), 2.68 (1H, dd, J=5.6 Hz, 16 Hz), 3.14 (1H, dd, J=5.6 Hz, 16 Hz), 3.70-3.95 (2H, m), 4.32-4.50 (1H, m), 6.29 (1H, d, J=7.6 Hz), 6.90-7.80 (11H, m), 9.16 (1H, brs)

Using the suitable starting materials, the compound of the above Example 242 is obtained in the same manner as in Example 389.

Example 390

To 4-oxo-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.5 g) are added 40 % solution of methylamine in methanol (5 ml), molecular sieves 4A (1 g) and dimethylformamide (6 ml), and the mixture is refluxed

for 4 hours. After cooling, the reaction mixture is filtered and to the filtrate is added sodium borohydride (80 mg), and the mixture is stirred at room temperature for 1 hour. The reaction mixture is concentrated and water is added to the resulting residue, and extracted with ethyl acetate. The solvent is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1) to give 4-methylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline (0.2 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ : 1.62 (1H, brs), 1.90-2.25 (2H, m), 2.55 (3H, s), 3.78 (1H, t, $J=5.1$ Hz), 3.95 (2H, t, $J=6.7$ Hz), 6.99 (1H, d, $J=7.9$ Hz), 6.90-7.13 (2H, m)

Using the suitable starting materials, the compounds of the above Examples 238, 239, 244, 247, 375 and 376 are obtained in the same manner as in Example 390.

Example 391

To 3-carboxy-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline (0.7 g) are added dimethylformamide (7 ml), diethyl cyanophosphate (0.3 ml) and dimethylamine hydrochloride (0.15 g). Further thereto is added triethylamine (0.8 ml) and the mixture is stirred at room temperature for 1 hour. Water is added to the reaction mixture and extracted with ethyl acetate. The solvent is concentrated and to the resulting residue is added diethyl ether. The precipitated crystal is collected by filtration

to give 3-dimethylamido-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline (0.5 g) as light yellow powder, m.p. 186 - 187°C.

Example 392

To a solution of 1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (3.0 g) in dichloromethane (50 ml) is added succinic anhydride (1.4 g) and the mixture is stirred at room temperature for 4.5 hours. The reaction mixture is evaporated under reduced pressure in order to remove the solvent therefrom, and the resulting crystal is recrystallized from ethyl acetate to give 1-[4-(3-carboxypropionylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (3.61 g) as colorless needles, m.p. 192°C.

Using the suitable starting materials, the compound of the above Example 253 is obtained in the same manner as in Example 392.

Example 393

1-[4-(3-Carboxypropionylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.5 g) is dissolved in dimethylformamide (1 ml) and thereto is added dropwise diethyl cyanophosphate (0.25 g) under ice-cooling. The mixture is stirred at room temperature for 30 minutes and then cooled again with ice. Thereto are added dropwise a solution of diethylamine (0.11 g) in dimethylformamide (1 ml) and triethylamine (0.34 g). The mixture is stirred at room temperature for 16 hours. The solvent is distilled off

under reduced pressure and water is added to the resulting residue. The mixture is extracted with dichloromethane. The organic layer is washed successively with diluted hydrochloric acid, water, saturated sodium hydrogen carbonate solution, water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate), and recrystallized from n-hexane/ethyl acetate to give 1-[4-(3-diethylaminocarbonylpropionylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.42 g) as colorless scales, m.p. 165 - 167°C.

Using the suitable starting materials, the compounds of the above Examples 255 - 263 are obtained in the same manner as in Example 393.

Example 394

To a solution of 1-[4-(2-chloroacetylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2.06 g) in dimethylformamide (5 ml) are added sodium iodide (0.90 g), potassium carbonate (1.1 g) and cyclohexylamine (0.89 g), and the mixture is stirred at room temperature for 2 hours. Dimethylformamide is distilled off under reduced pressure and water is added to the resulting residue. The mixture is extracted with dichloromethane. The organic layer is washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is

distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate), and recrystallized from n-hexane/-ethyl acetate to give 1-[4-(2-cyclohexylaminoacetyl-amino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2.03 g) as white powder, m.p. 139 - 142°C.

Using the suitable starting materials, the compounds of the above Examples 271 - 309 and 317 are obtained in the same manner as in Example 394.

Example 395

o-Cresol (0.36 g) is dissolved in dimethylsulfoxide (4 ml) containing sodium hydroxide powder (0.18 g) and thereto is added 1-[4-(2-chloroacetyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.03 g). The mixture is stirred at 90°C for 7.5 hours. The reaction mixture is poured into ice-water (300 ml) and the precipitated crystal is collected by filtration, washed with water, and purified by silica gel column chromatography (eluent; n-hexane : ethyl acetate = 2 : 1), and recrystallized from ethyl acetate to give 1-[4-[2-(2-methylphenoxy)acetyl-amino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (546 mg) as colorless scales, m.p. 172.5 - 175°C.

Using the suitable starting materials, the compounds of the above Examples 310 and 312 - 316 are obtained in the same manner as in Example 395.

Example 396

A mixture of 1-[4-[2-(6-bromohexyloxy)benzoyl]-

amino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (2.00 g), sodium acetate (0.36 g), sodium iodide (0.55 g) and acetic acid (20 ml) is refluxed for 1 day. The solvent is distilled off and the resulting residue is extracted with ethyl acetate. The organic layer is washed successively with 2N aqueous sodium hydroxide solution and saturated saline solution, and dried over magnesium sulfate. The solvent is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol = 500 : 1), and recrystallized from ethanol to give 1-{4-[2-(6-acetyloxyhexyloxy)benzoylamino]-benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (1.07 g) as white powder, m.p. 145 - 146°C.

Using the suitable starting materials, the compound of the above Example 360 is obtained in the same manner as in Example 396.

Example 397

A mixture of 1-{4-[2-(6-bromohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g), diethylamine (0.16 ml), triethylamine (0.21 ml) and acetonitrile (20 ml) is refluxed overnight. The solvent is distilled off and the resulting residue is dissolved in chloroform, washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent;

chloroform : methanol = 200 : 1 + 50 : 1) and converted into the hydrochloride thereof in methanol. The product is recrystallized from methanol/diethyl ether to give 1-{4-[2-(6-diethylaminohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride (0.42 g) as white powder, m.p. 91 - 95°C.

Using the suitable starting materials, the compounds of the above Examples 330, 332, 333, 335, 336, 339, 341, 342, 344 - 349, 352 - 355, 357 and 366 are obtained in the same manner as in Example 397.

Example 398

A mixture of 1-{4-[2-(6-bromohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (4.00 g), potassium phthalimide (2.02 g) and dimethylformamide (100 ml) is stirred at 100°C for 5 hours. The reaction mixture is filtered and the filtrate is distilled off. The resulting residue is extracted with ethyl acetate and the organic layer is washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane), and recrystallized from methanol/diethyl ether to give 1-{4-[2-(6-phthalimido-hexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (4.06 g) as white powder, m.p. 145 - 146.5°C.

Using the suitable starting materials, the

compounds of the above Examples 331, 340, 364 and 365 are obtained in the same manner as in Example 398.

Example 399

A mixture of 1-{4-[2-(6-phthalimidohexyloxy)-benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (3.75 g), hydrazine hydrate (0.44 ml) and ethanol (30 ml) is refluxed for 3.5 hours. The precipitated crystal is collected by filtration, dried and purified by silica gel column chromatography (eluent; chloroform : methanol : aqueous ammonia = 100 : 10 : 1), and recrystallized from methanol/diethyl ether to give 1-{4-[2-(6-aminohexyloxy)-benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (2.52 g) as white powder, m.p. 135.5 - 137.5°C.

Using the suitable starting materials, the compounds of the above Examples 284, 344 and 345 are obtained in the same manner as in Example 399.

Example 400

A mixture of 1-{4-[2-(6-aminohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g), acetic anhydride (20 ml) and two drops of conc. sulfuric acid is stirred at room temperature for 3 hours. To the reaction mixture is added aqueous 2N aqueous sodium hydroxide solution under ice-cooling and the mixture is extracted with chloroform. The organic layer is washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off

and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol = 200 : 1), and recrystallized from methanol/diethyl ether to give 1-{4-[2-(6-acetylaminohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (0.60 g) as colorless needles, m.p. 171 - 172°C.

Example 401

A mixture of 1-{4-[2-(6-aminohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g), benzoyl chloride (0.20 ml), triethylamine and dichloromethane (20 ml) is stirred at room temperature for 1 hour. The reaction mixture is washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is concentrated and the resulting residue is recrystallized from ethanol to give 1-{4-[2-(6-benzoylaminohexyloxy)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (0.71 g) as white powder, m.p. 178 - 178.5°C.

Using the suitable starting materials, the compounds of the above Examples 348 and 357 are obtained in the same manner as in Examples 400 and 401.

Example 402

A mixture of 1-[4-(2-ethoxycarbonylmethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.00 g), aqueous ammonia (100 ml), ammonium chloride (0.3 g) and methanol (150 ml) is heated at 100°C for 4 hours in a sealed

tube. The solvent is distilled off and the resulting residue is extracted with chloroform, washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol = 50 : 1), and recrystallized from methanol/diethyl ether to give 1-[4-(2-carbamoylmethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.43 g) as white powder, m.p. 198 - 199°C.

Example 403

A mixture of 1-[4-(2-chloro-4-aminobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.55 g), acetic anhydride (15 ml), acetic acid (5 ml) and a drop of sulfuric acid is stirred at room temperature for 1 hour. To the reaction mixture is added aqueous 2N aqueous sodium hydroxide solution and the mixture is extracted with chloroform. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is concentrated and the resulting residue is recrystallized from methanol/diethyl ether to give 1-[4-(2-chloro-4-acetylaminobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.28 g) as white powder, m.p. 214 - 243°C.

Using the suitable starting materials, the compound of the above Example 44 is obtained in the same manner as in Example 403.

Example 404

A mixture of 1-[4-(1-benzyloxycarbonyl-4-piperidinylcarbonylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (8.00 g), 10 % Pd-C (0.8 g) and ethanol (250 ml) is subjected to catalytic hydrogenation at 50°C under 4 atm. of hydrogen pressure for 6 hours. The catalyst is removed by filtration and the filtrate is evaporated under reduced pressure. The resulting residue is extracted with ethyl acetate and washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol : ammonium hydroxide = 50 : 10 : 1) to give 1-{4-[4-(4-piperidinyl)benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine (4.80 g), and a part (0.5 g) thereof is converted into the hydrochloride thereof in methanol. The hydrochloride is recrystallized from methanol/diethyl ether to give 1-{4-[4-(4-piperidinyl)-benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride (0.42 g) as white powder, m.p. 177 - 181.5°C.

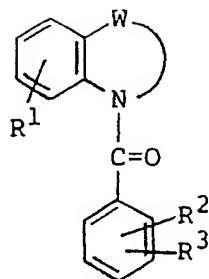
Example 405

Using the suitable starting materials, the following compound is obtained in the same manner as in the above Examples 1, 382 and 388.

1-[4-(4-Dimethylaminobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline, colorless amorphous

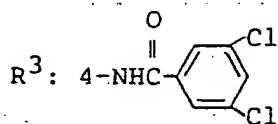
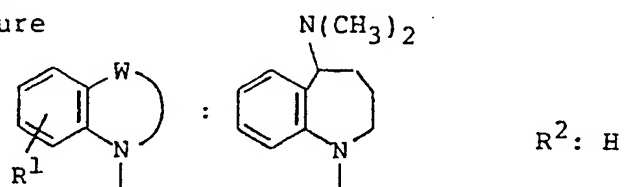
$^1\text{H-NMR}$ (DMSO-d_6) δ : 1.90-2.00 (2H, m), 2.82 (2H, t, $J=6.5$ Hz), 2.98 (6H, s), 3.77 (2H, t, $J=6.5$ Hz), 6.70-7.30 (6H, m), 7.32 (2H, d, $J=8.6$ Hz), 7.73 (2H, d, $J=8.6$ Hz), 8.00-8.20 (1H, m), 8.39 (1H, d, $J=2.2$ Hz), 10.37 (1H, s)

Using the suitable starting materials, the following compounds are obtained in the same manner as in Example 1.

Table 2

Example 406

Structure



Crystalline form: White powder

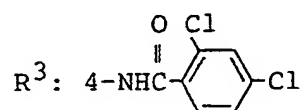
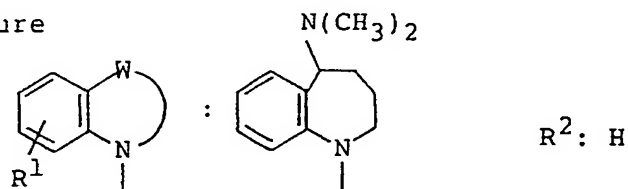
Recrystallization solvent: Ethanol

Melting Point: 216 - 218°C

Form: Free

Example 407

Structure



Crystalline form: White powder

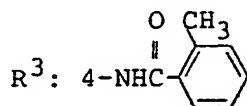
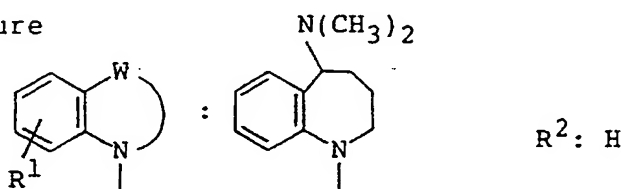
Recrystallization solvent: Ethanol

Melting Point: 181 - 183°C

Form: Free

Example 408

Structure



Crystalline form: White powder

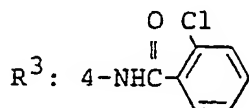
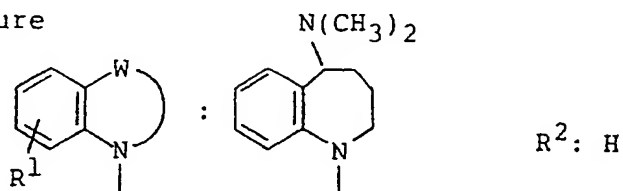
Recrystallization solvent: Ethanol

Melting Point: 207 - 208°C

Form: Free

Example 409

Structure



Crystalline form: White powder

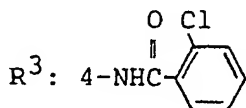
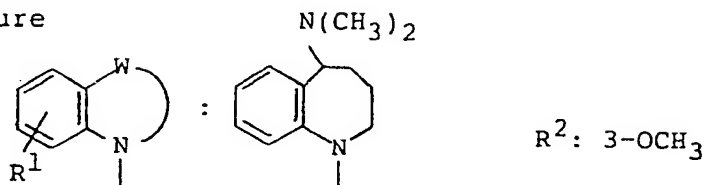
Recrystallization solvent: Ethanol

Melting Point: 213 - 214°C

Form: Free

Example 410

Structure



Crystalline form: White powder

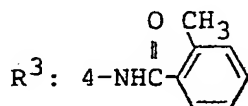
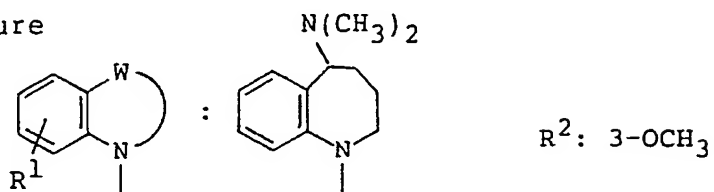
Recrystallization solvent: Ethanol

Melting Point: 136 - 138°C

Form: Free

Example 411

Structure



Crystalline form: White powder

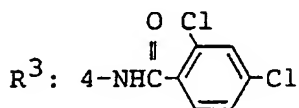
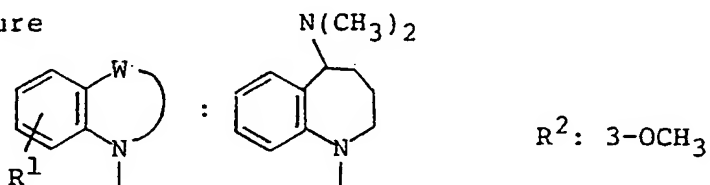
Recrystallization solvent: Ethanol

Melting Point: 130 - 132°C

Form: Free

Example 412

Structure



Crystalline form: White powder

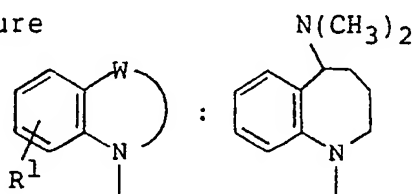
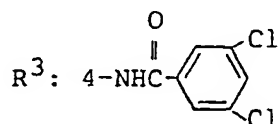
Recrystallization solvent: Ethanol

Melting Point: 143 - 145°C

Form: Free

Example 413

Structure

 $\text{R}^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

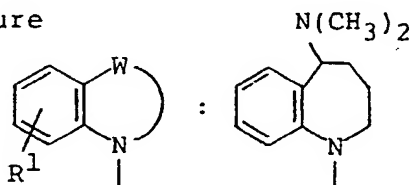
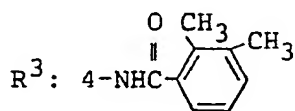
Recrystallization solvent: Ethanol

Melting Point: 171 - 173°C

Form: Free

Example 414

Structure

 $\text{R}^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

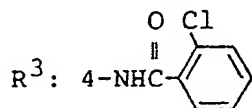
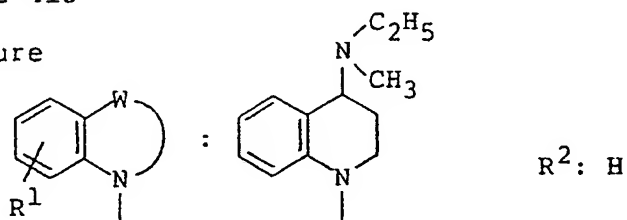
Recrystallization solvent: Ethanol

Melting Point: 162 - 164°C

Form: Free

Example 415

Structure



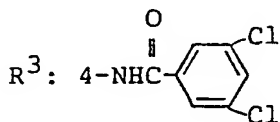
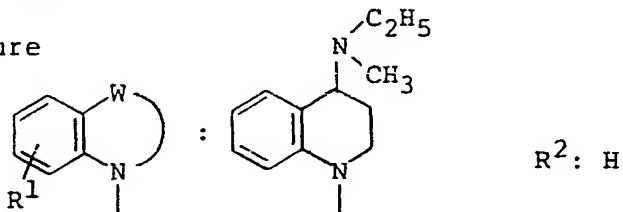
Crystalline form: Colorless amorphous

NMR analysis: 49)

Form: Free

Example 416

Structure



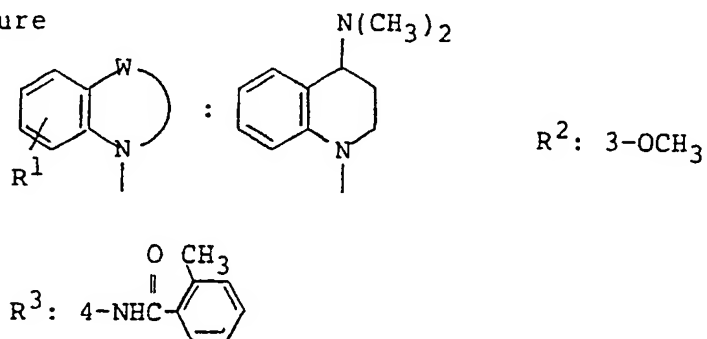
Crystalline form: Colorless amorphous

NMR analysis: 50)

Form: Free

Example 417

Structure



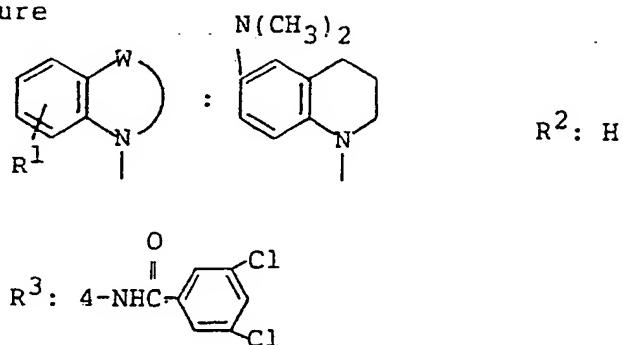
Crystalline form: Colorless amorphous

NMR analysis: 51)

Form: Free

Example 418

Structure



Crystalline form: Colorless needles

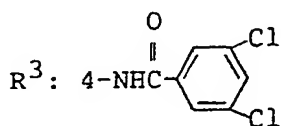
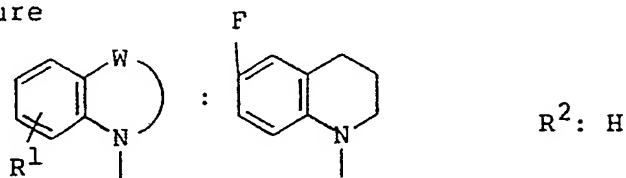
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 228.5 - 230°C

Form: Free

Example 419

Structure



Crystalline form: White powder

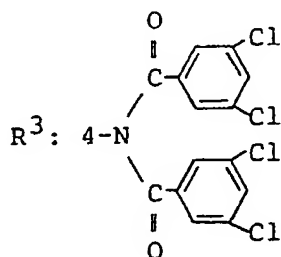
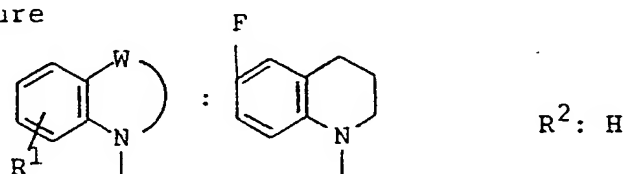
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 205.5 - 206.5°C

Form: Free

Example 420

Structure



Crystalline form: White powder

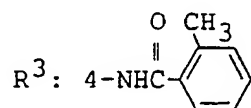
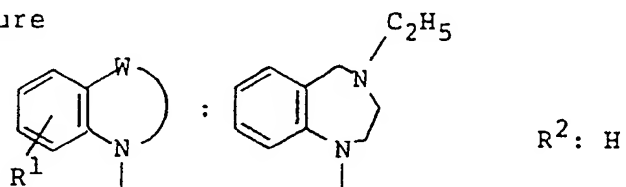
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 210 - 212°C

Form: Free

Example 421

Structure



Crystalline form: White powder

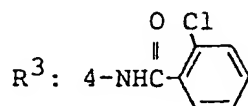
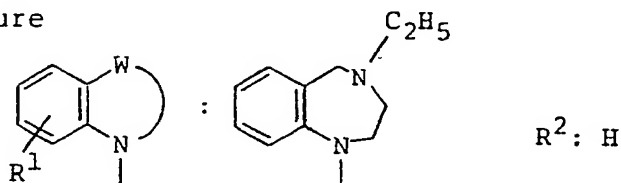
Recrystallization solvent: Ethanol

Melting Point: 166 - 167°C

Form: Free

Example 422

Structure



Crystalline form: White powder

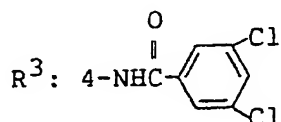
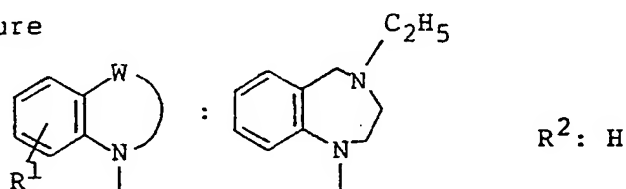
Recrystallization solvent: Ethanol

Melting Point: 191.5 - 192.5°C

Form: Free

Example 423

Structure



Crystalline form: White powder

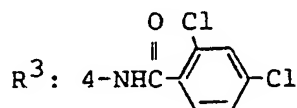
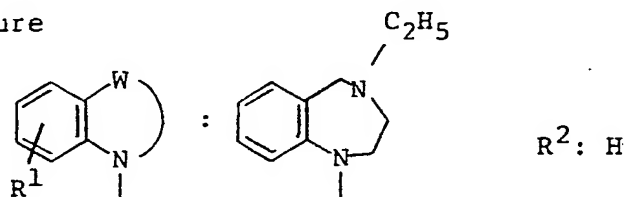
Recrystallization solvent: Ethanol

Melting Point: 209 - 210°C

Form: Free

Example 424

Structure



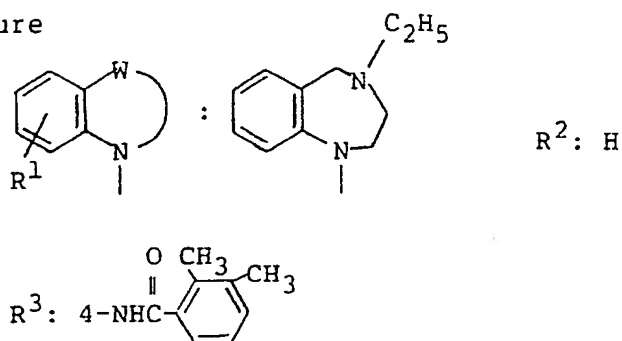
Crystalline form: Colorless amorphous

NMR analysis: 52)

Form: Free

Example 425

Structure



Crystalline form: White powder

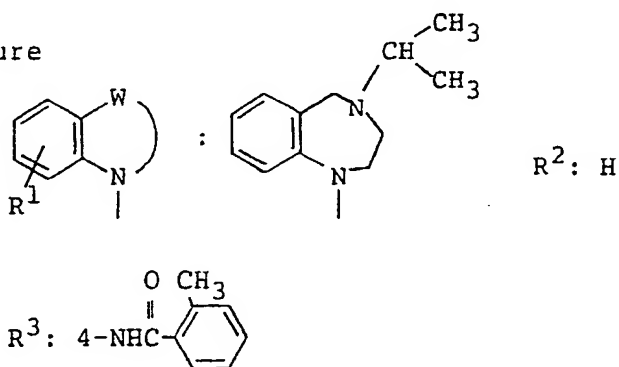
Recrystallization solvent: Ethanol

Melting Point: 148 - 149°C

Form: Free

Example 426

Structure



Crystalline form: White powder

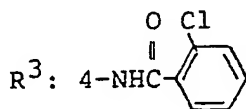
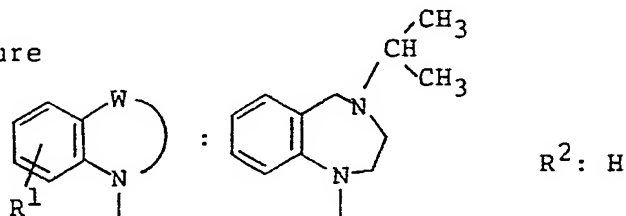
Recrystallization solvent: Ethanol

Melting Point: 157 - 158°C

Form: Free

Example 427

Structure



Crystalline form: White powder

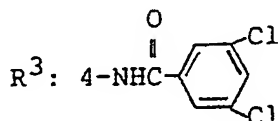
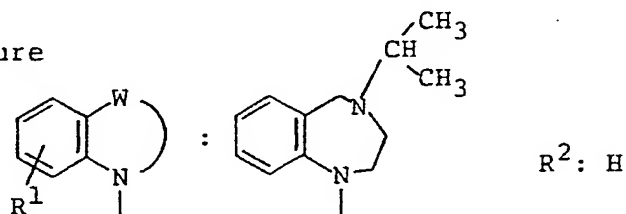
Recrystallization solvent: Ethanol

Melting Point: 194.5 - 195.5°C

Form: Free

Example 1428

Structure



Crystalline form: White powder

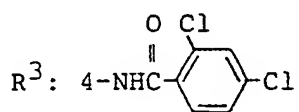
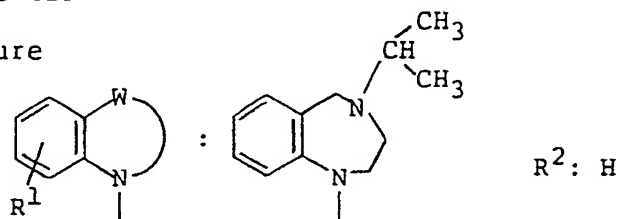
Recrystallization solvent: Ethanol

Melting Point: 179.5 - 180.5°C

Form: Free

Example 429

Structure



Crystalline form: White powder

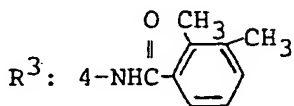
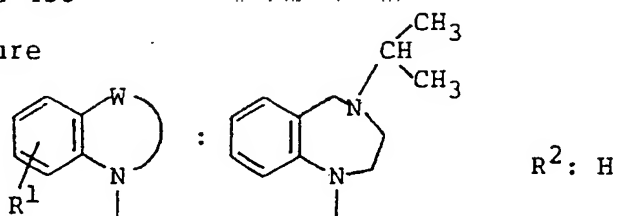
Recrystallization solvent: Ethanol

Melting Point: 190 - 191°C

Form: Free

Example 430

Structure



Crystalline form: White powder

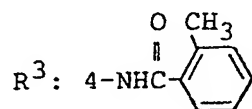
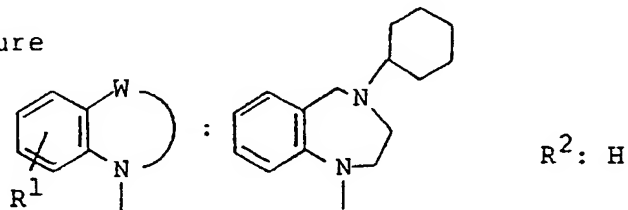
Recrystallization solvent: Ethanol

Melting Point: 159 - 160°C

Form: Free

Example 431

Structure



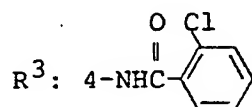
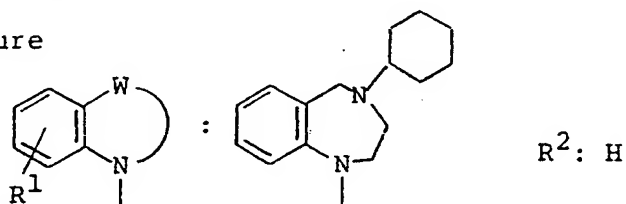
Crystalline form: Colorless amorphous

NMR analysis: 53)

Form: Hydrochloride

Example 432

Structure



Crystalline form: White powder

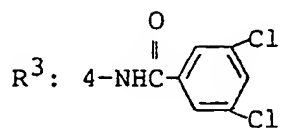
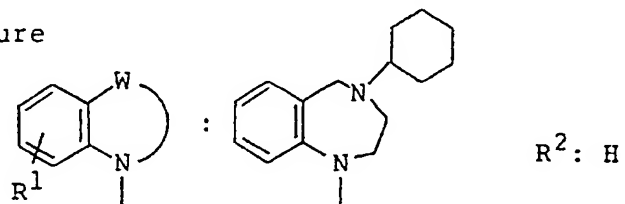
Recrystallization solvent: Ethanol

Melting Point: 155 - 156°C

Form: Free

Example 433

Structure



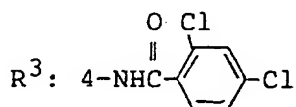
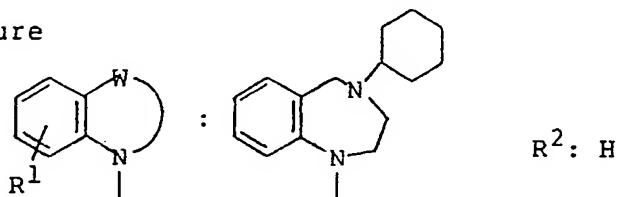
Crystalline form: Colorless amorphous

NMR analysis: 54)

Form: Free

Example 434

Structure



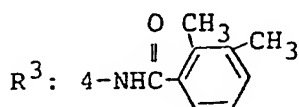
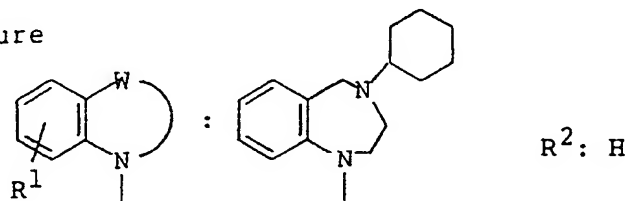
Crystalline form: Colorless amorphous

NMR analysis: 55)

Form: Free

Example 435

Structure



Crystalline form: White powder

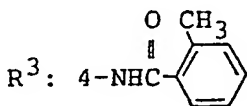
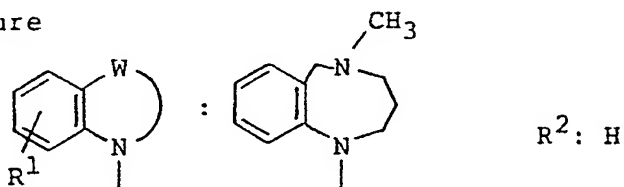
Recrystallization solvent: Ethanol

Melting Point: 175 - 177°C

Form: Free

Example 436

Structure



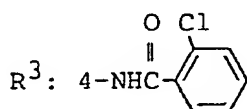
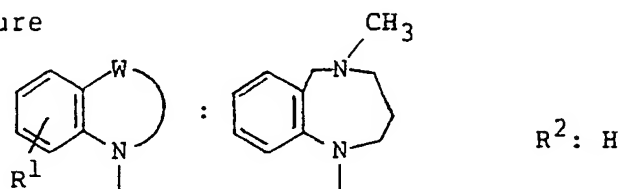
Crystalline form: Colorless amorphous .

NMR analysis: 56)

Form: Free

Example 437

Structure



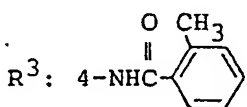
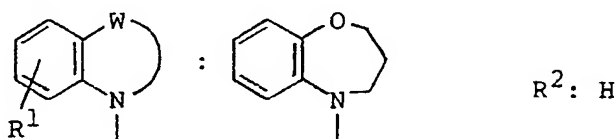
Crystalline form: Colorless amorphous

NMR analysis: 57)

Form: Free

Example 438

Structure



Crystalline form: White powder

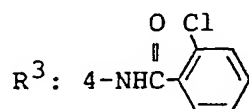
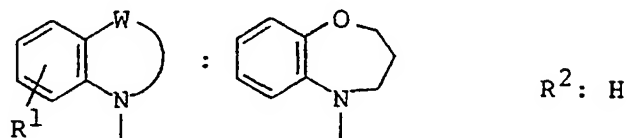
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 219 - 220°C

Form: Free

Example 439

Structure



Crystalline form: White powder

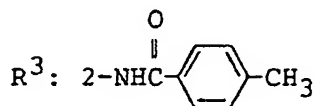
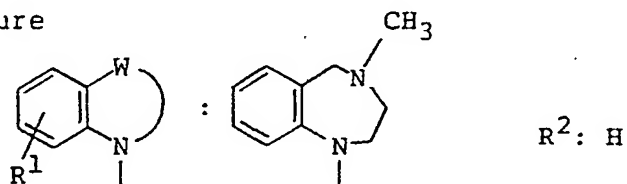
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 215 - 218°C

Form: Free

Example 440

Structure



Crystalline form: White powder

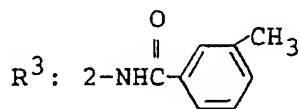
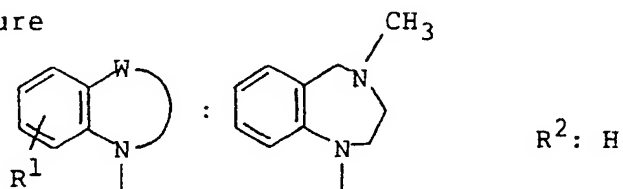
Recrystallization solvent: Ethanol

Melting Point: 128.5 - 129.5°C

Form: Free

Example 441

Structure



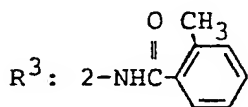
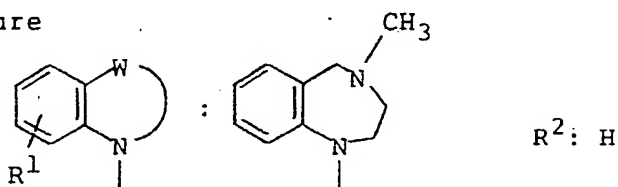
Crystalline form: Colorless amorphous

NMR analysis: 58)

Form: Free

Example 442

Structure



Crystalline form: White powder

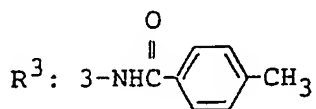
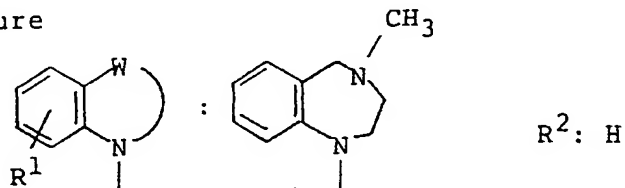
Recrystallization solvent: Ethanol

Melting Point: 153 - 154°C

Form: Free

Example 443

Structure



Crystalline form: White powder

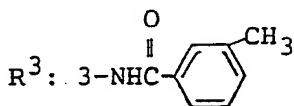
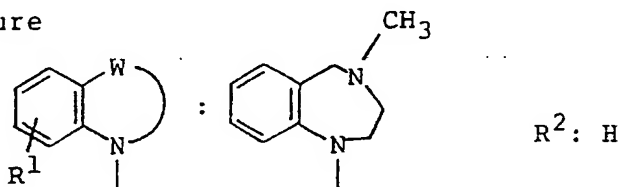
Recrystallization solvent: Ethanol

Melting Point: 150 - 153°C

Form: Free

Example 444

Structure



Crystalline form: White powder

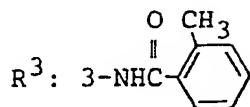
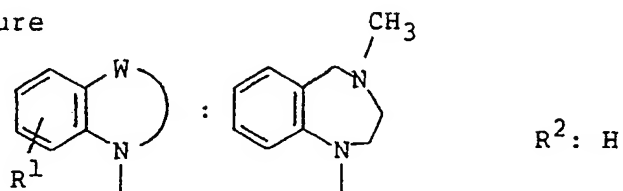
Recrystallization solvent: Ethanol

Melting Point: 139 - 141°C

Form: Free

Example 445

Structure



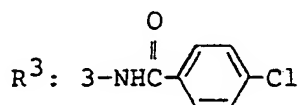
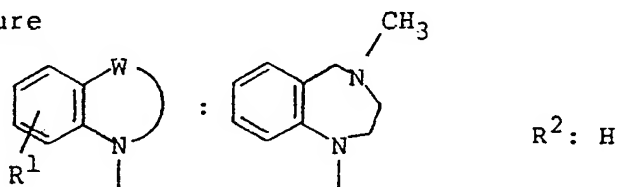
Crystalline form: Colorless amorphous

NMR analysis: 59)

Form: Free

Example 446

Structure



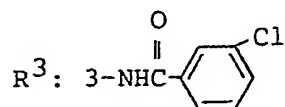
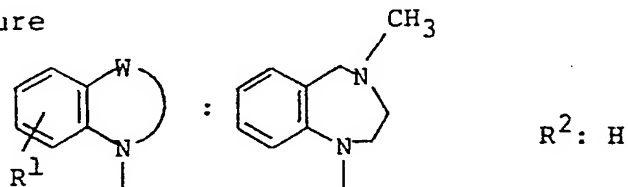
Crystalline form: Colorless amorphous

NMR analysis: 60)

Form: Free

Example 447

Structure



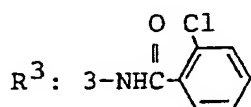
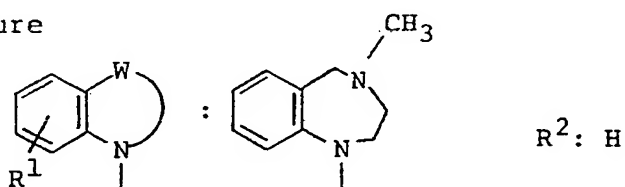
Crystalline form: Colorless amorphous

NMR analysis: 61)

Form: Free

Example 448

Structure



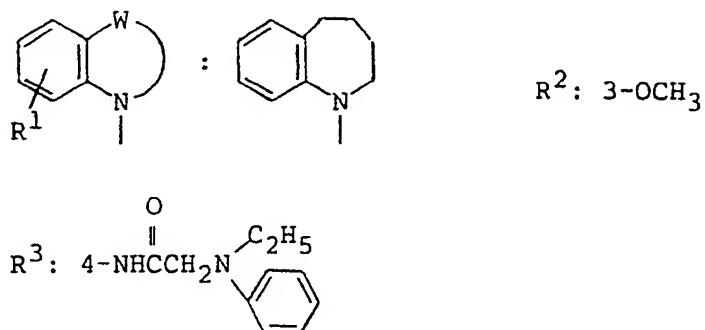
Crystalline form: Colorless amorphous

NMR analysis: 62)

Form: Free

Example 449

Structure



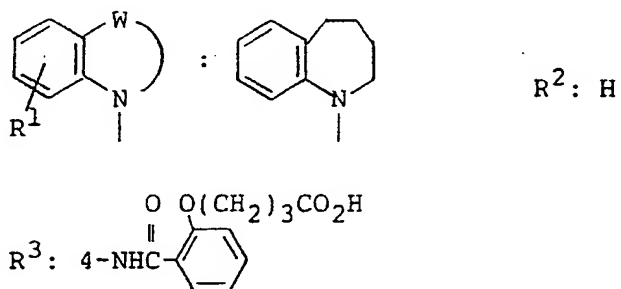
Crystalline form: Colorless amorphous

NMR analysis: 63)

Form: Free

Example 450

Structure



Crystalline form: White powder

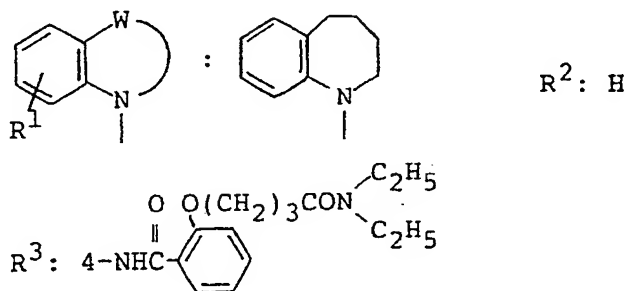
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 172.5 - 173.5°C

Form: Free

Example 451

Structure



Crystalline form: Colorless prisms

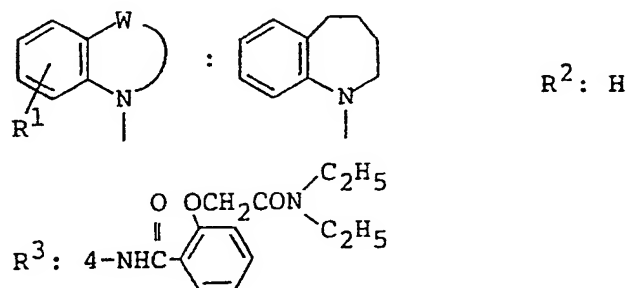
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 122.5 - 123°C

Form: Free

Example 452

Structure



Crystalline form: White powder

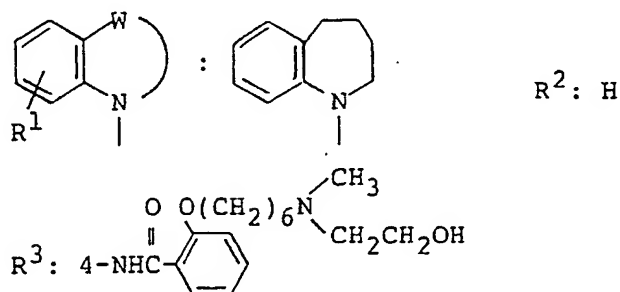
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 198 - 199.5°C

Form: Free

Example 453

Structure



Crystalline form: White powder

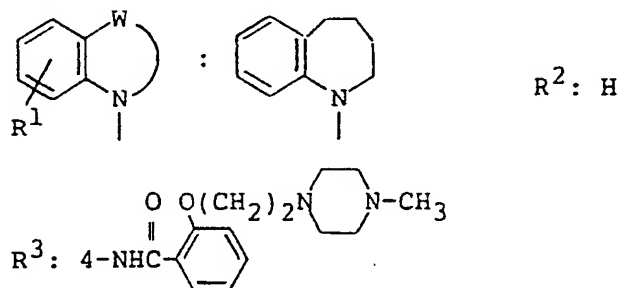
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 118 - 119.5°C

Form: Hydrochloride

Example 454

Structure



Crystalline form: White powder

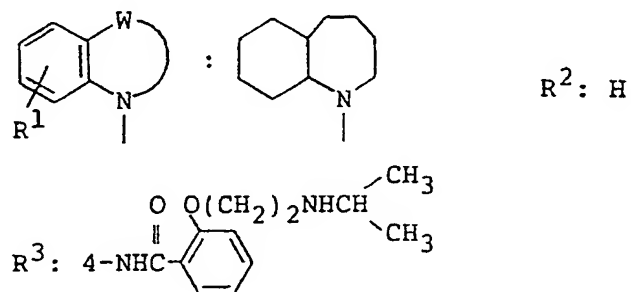
Recrystallization solvent: Ethanol

Melting Point: 163 - 165°C

Form: Dihydrochloride

Example 455

Structure



Crystalline form: White powder

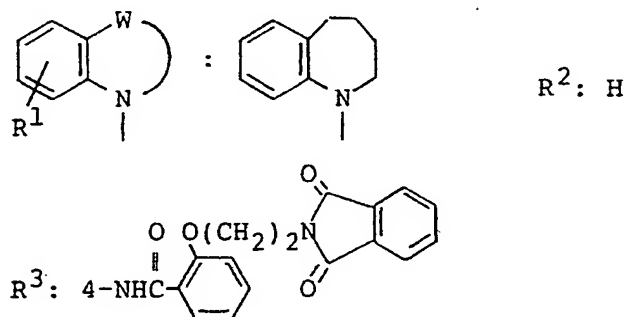
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 246 - 248°C

Form: Hydrochloride

Example 456

Structure



Crystalline form: White powder

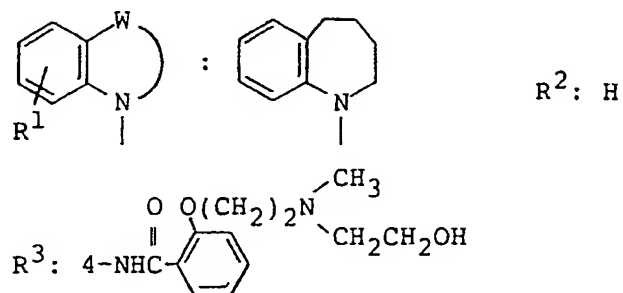
Recrystallization solvent: Chloroform/ethanol

Melting Point: 204 - 205°C

Form: Free

Example 457

Structure



Crystalline form: Colorless prisms

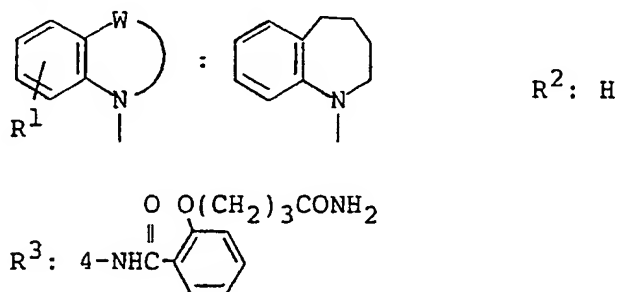
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 127 - 128°C

Form: Hydrochloride

Example 458

Structure



Crystalline form: White powder

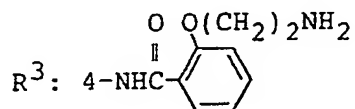
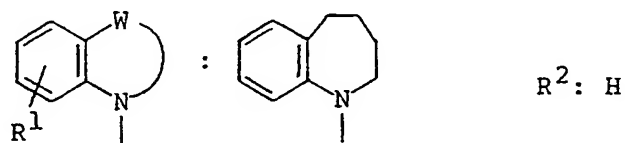
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 220 - 221°C

Form: Free

Example 459

Structure



Crystalline form: Colorless needles

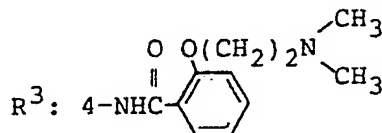
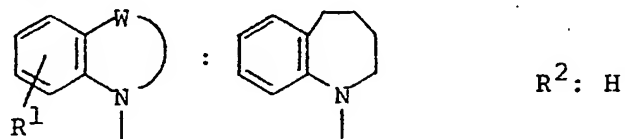
Recrystallization solvent: Ethanol

Melting Point: 190 - 192°C

Form: Free

Example 460

Structure



Crystalline form: White powder

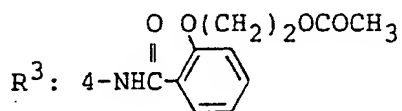
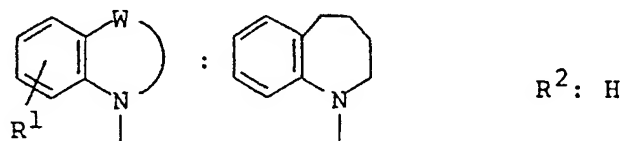
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 189 - 191°C

Form: Hydrochloride

Example 461

Structure



Crystalline form: Colorless needles

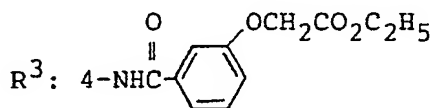
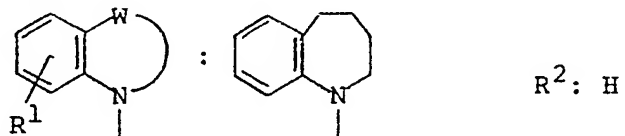
Recrystallization solvent: Ethanol

Melting Point: 173 - 174°C

Form: Free

Example 462

Structure



Crystalline form: White powder

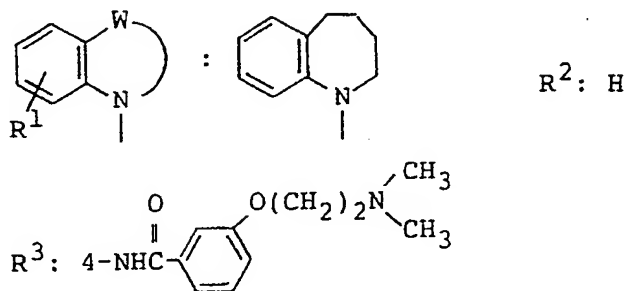
Recrystallization solvent: Dichloromethane/ethanol

Melting Point: 129 - 130°C

Form: Free

Example 463

Structure



Crystalline form: White powder

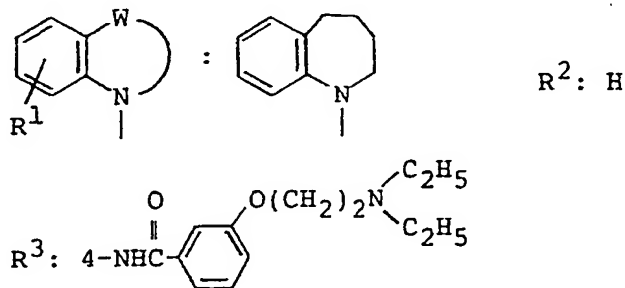
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 130 - 133°C

Form: Hydrochloride

Example 464

Structure



Crystalline form: Light yellow powder

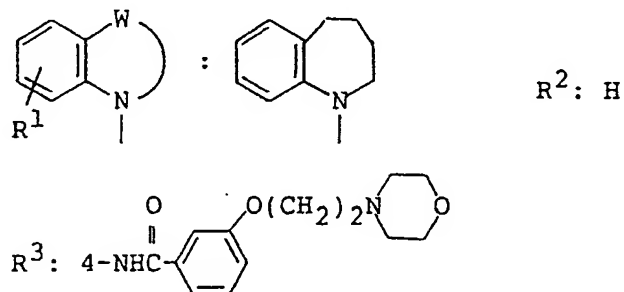
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 170.5 - 172°C

Form: Hydrochloride

Example 465

Structure



Crystalline form: White powder

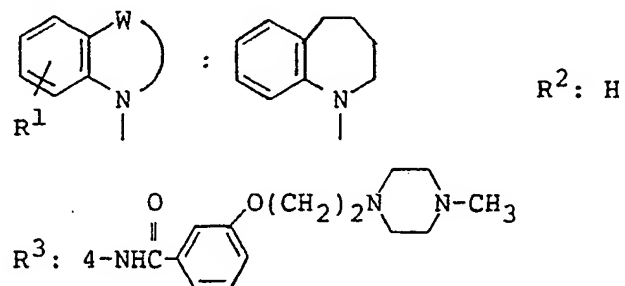
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 126 - 131°C

Form: Hydrochloride

Example 466

Structure



Crystalline form: White powder

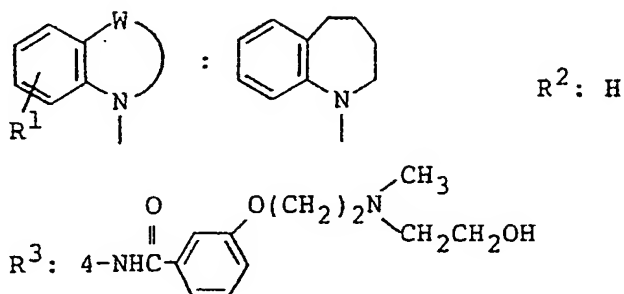
Recrystallization solvent: Ethanol

Melting Point: 182 - 185°C

Form: Dihydrochloride

Example 467

Structure



Crystalline form: White powder

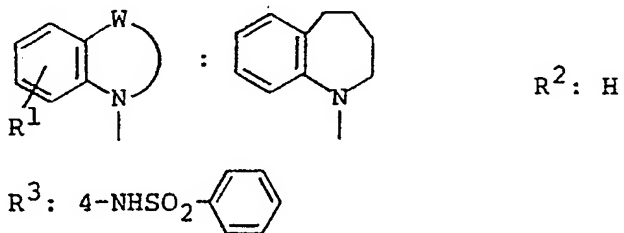
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 116 - 121°C

Form: Hydrochloride

Example 468

Structure



Crystalline form: Colorless prisms

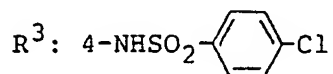
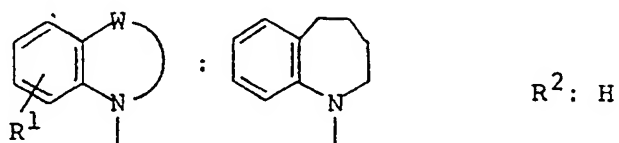
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 178 - 182.5°C

Form: Free

Example 469

Structure



Crystalline form: Colorless particles

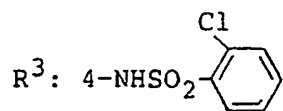
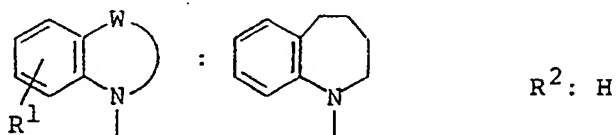
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 185 - 187°C

Form: Free

Example 470

Structure



Crystalline form: White powder

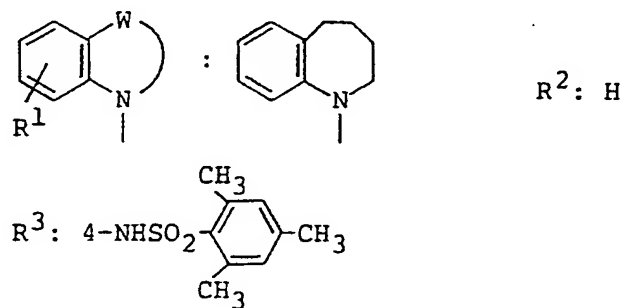
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 215 - 217°C

Form: Free

Example 471

Structure



Crystalline form: White powder

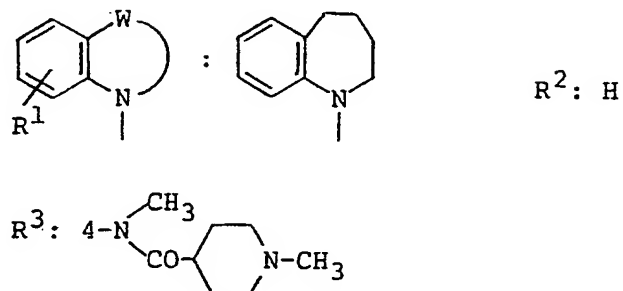
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 176 - 178°C

Form: Free

Example 472

Structure



Crystalline form: Light yellow powder

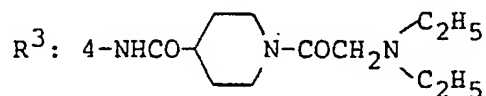
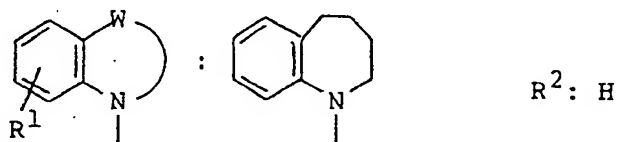
Recrystallization solvent: Methanol/n-hexane

Melting Point: 194.5 - 197°C

Form: Free

Example 473

Structure



Crystalline form: White powder

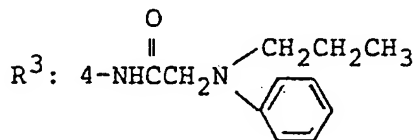
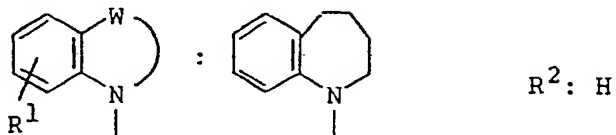
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 161.5 - 165.5°C

Form: Hydrochloride

Example 474

Structure



Crystalline form: White powder

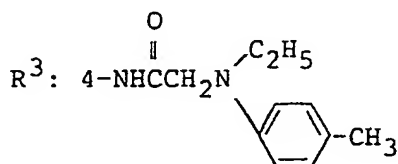
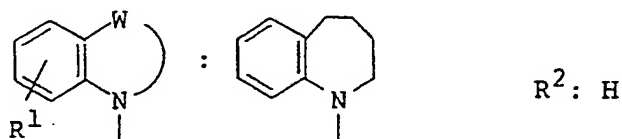
Recrystallization solvent: Ethyl acetate

Melting Point: 152 - 153°C

Form: Free

Example 475

Structure



Crystalline form: Colorless needles

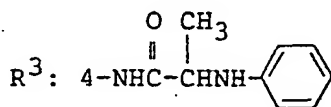
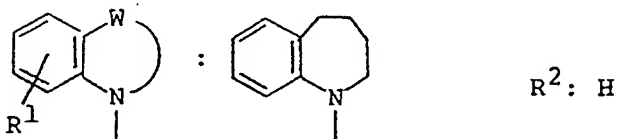
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 147 - 148°C

Form: Free

Example 476

Structure



Crystalline form: Light yellow powder

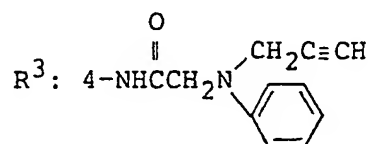
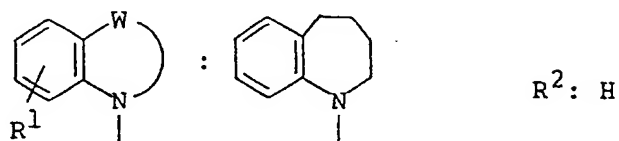
Recrystallization solvent: Ethyl acetate

Melting Point: 215 - 217°C

Form: Free

Example 477

Structure



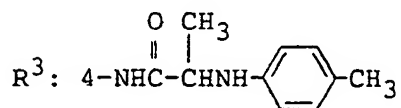
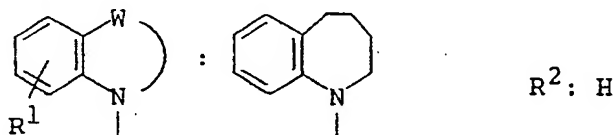
Crystalline form: Colorless amorphous

NMR analysis: 64)

Form: Free

Example 478

Structure



Crystalline form: White powder

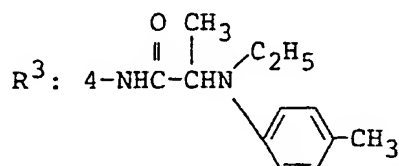
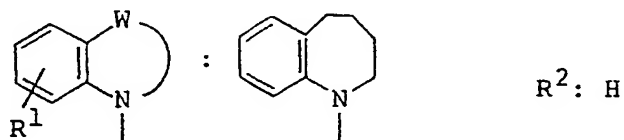
Recrystallization solvent: Ethyl acetate

Melting Point: 180 - 181°C

Form: Free

Example 479

Structure



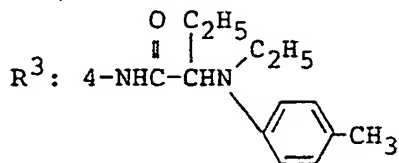
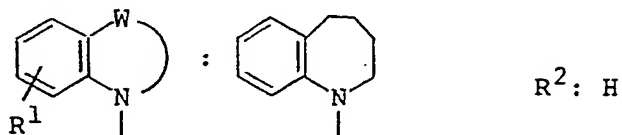
Crystalline form: Colorless amorphous

NMR analysis: 65)

Form: Free

Example 480

Structure



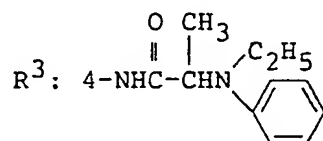
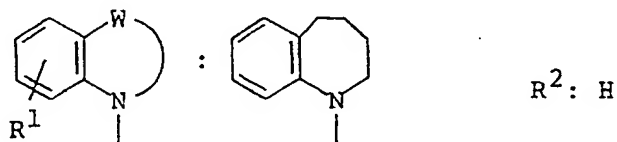
Crystalline form: Colorless amorphous

NMR analysis: 66)

Form: Free

Example 481

Structure



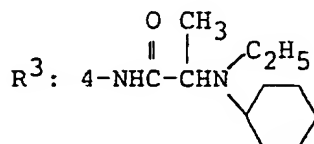
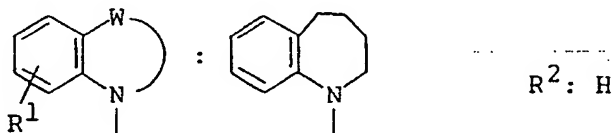
Crystalline form: Colorless amorphous . . .

NMR analysis: 67)

Form: Free

Example 482

Structure



Crystalline form: Colorless scales

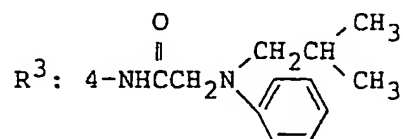
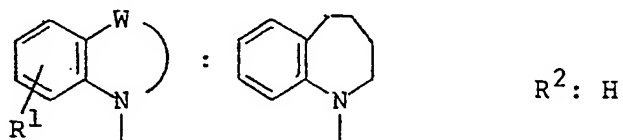
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 165 - 167°C

Form: Free

Example 483

Structure



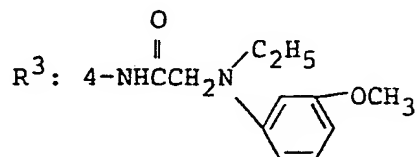
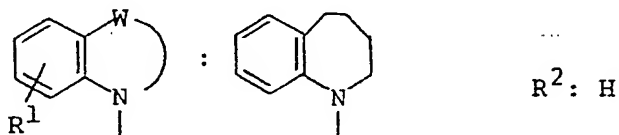
Crystalline form: Colorless amorphous

NMR analysis: 68)

Form: Free

Example 484

Structure



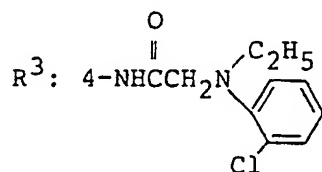
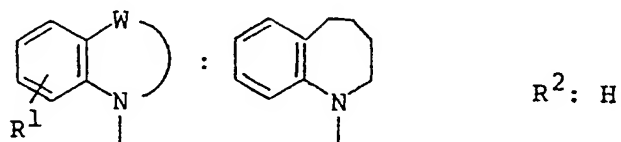
Crystalline form: Colorless amorphous

NMR analysis: 69)

Form: Free

Example 485

Structure



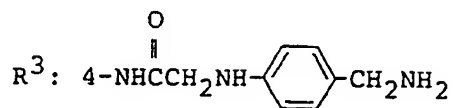
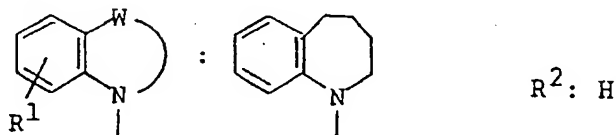
Crystalline form: Colorless amorphous

NMR analysis: 70)

Form: Free

Example 486

Structure



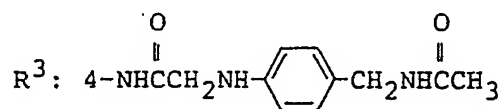
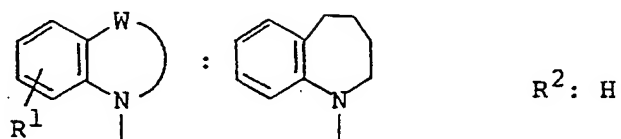
Crystalline form: Colorless amorphous

NMR analysis: 71)

Form: Free

Example 487

Structure



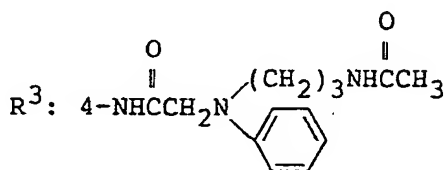
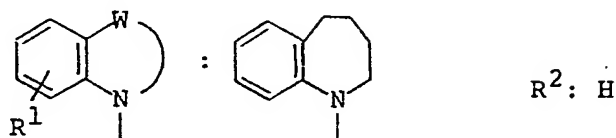
Crystalline form: Colorless amorphous

NMR analysis: 72)

Form: Free

Example 488

Structure



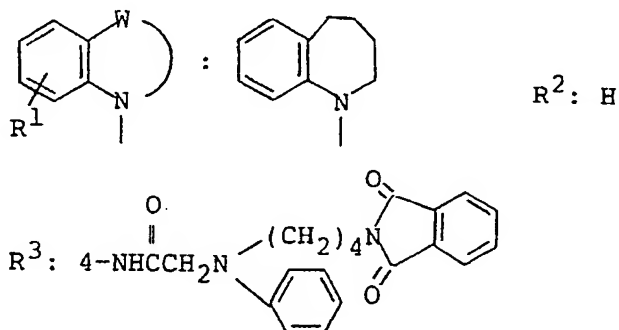
Crystalline form: Colorless amorphous

NMR analysis: 73)

Form: Free

Example 489

Structure



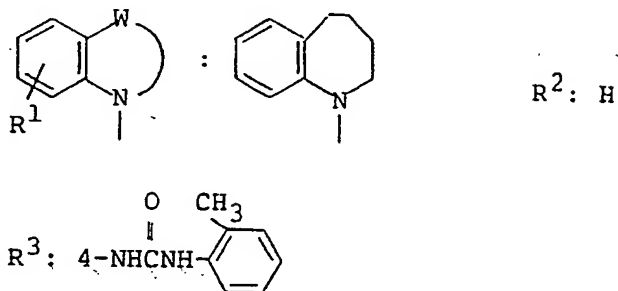
Crystalline form: Light yellow amorphous

NMR analysis: 74)

Form: Free

Example 490

Structure



Crystalline form: White powder

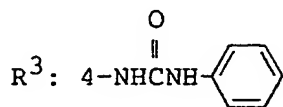
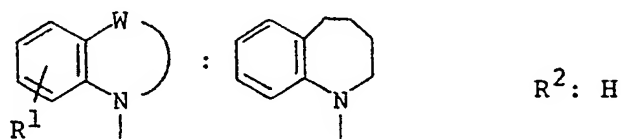
Recrystallization solvent: Ethyl acetate

Melting Point: 182 - 182.5°C

Form: Free

Example 491

Structure



Crystalline form: White powder

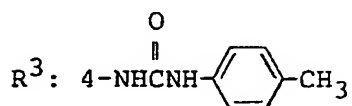
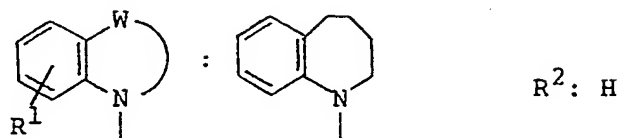
Recrystallization solvent: Ethyl acetate

Melting Point: 244 - 245°C

Form: Free

Example 492

Structure



Crystalline form: White powder

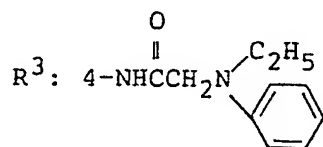
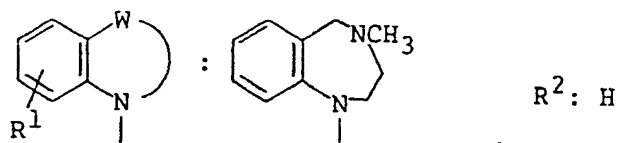
Recrystallization solvent: Ethyl acetate

Melting Point: 220 - 221.5°C

Form: Free

Example 493

Structure



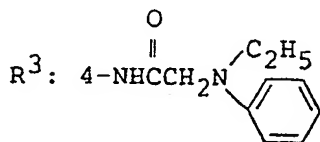
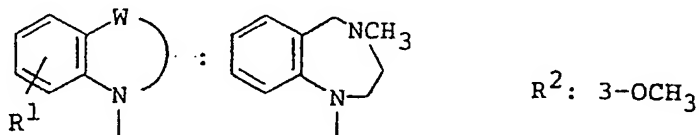
Crystalline form: Light yellow amorphous

NMR analysis: 75)

Form: Free

Example 494

Structure



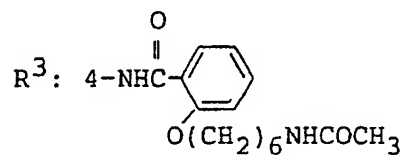
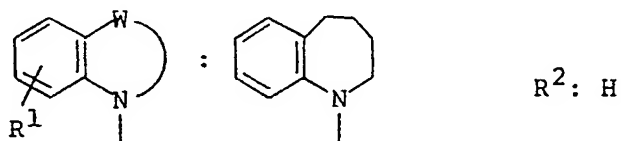
Crystalline form: Light yellow amorphous

NMR analysis: 76)

Form: Free

Example 495

Structure



Crystalline form: Colorless needles

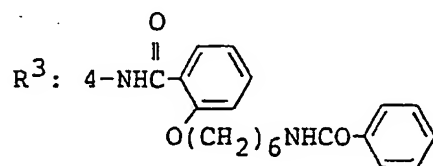
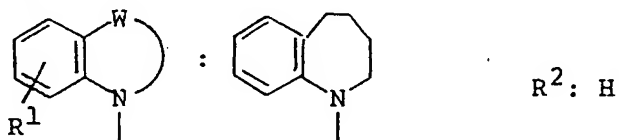
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 171 - 172°C

Form: Free

Example 496

Structure



Crystalline form: White powder

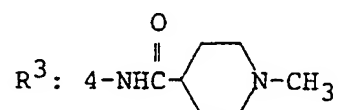
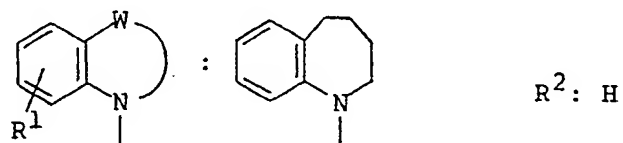
Recrystallization solvent: Ethanol

Melting Point: 178 - 178.5°C

Form: Free

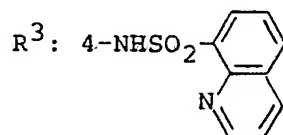
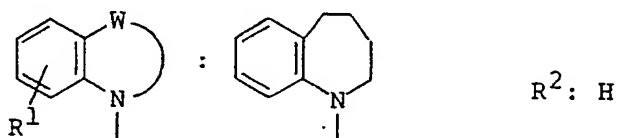
Example 497

Structure



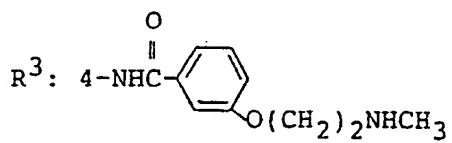
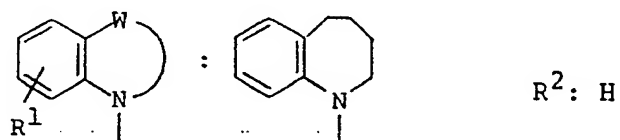
Example 498

Structure



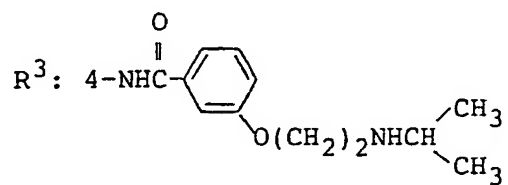
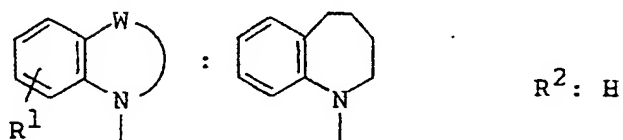
Example 499

Structure



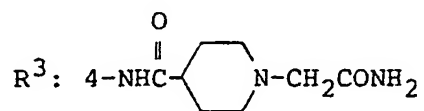
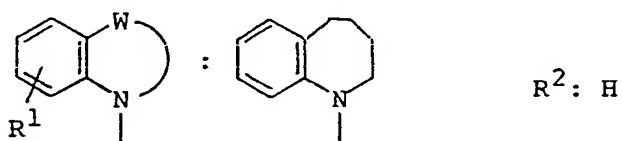
Example 500

Structure



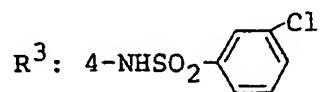
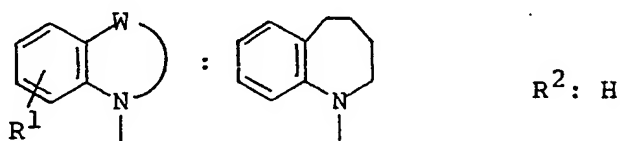
Example 501

Structure



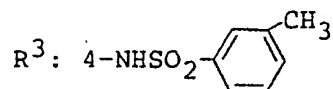
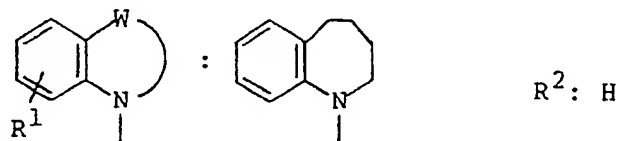
Example 502

Structure



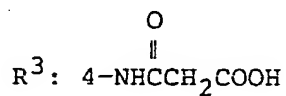
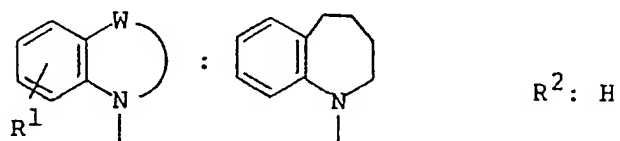
Example 503

Structure



Example 504

Structure



Crystalline form: Light yellow scales

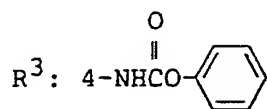
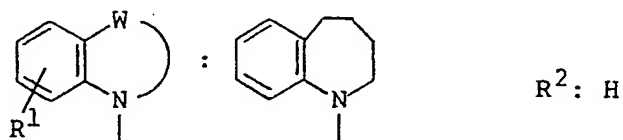
Recrystallization solvent: Ethanol/water

Melting Point: 129 - 131°C

Form: Free

Example 505

Structure



Crystalline form: White powder

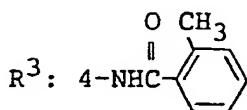
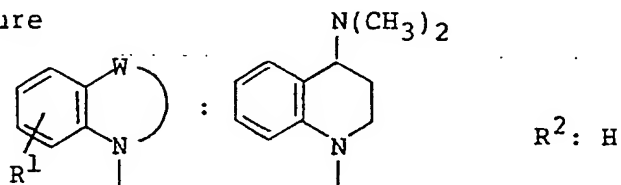
Recrystallization solvent: Ethyl acetate

Melting Point: 199 - 201°C

Form: Free

Example 506

Structure



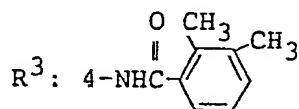
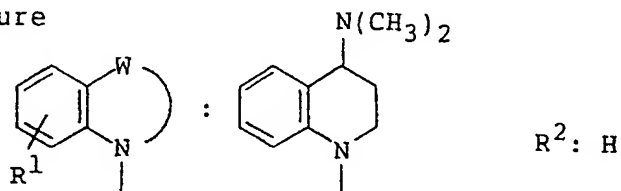
Crystalline form: Colorless amorphous

NMR analysis: 77)

Form: Free

Example 507

Structure



Crystalline form: White powder

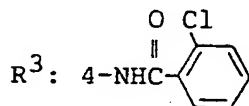
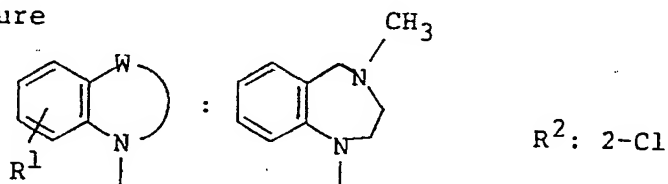
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 187.5 - 189°C

Form: Free

Example 508

Structure



Crystalline form: White powder

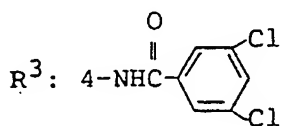
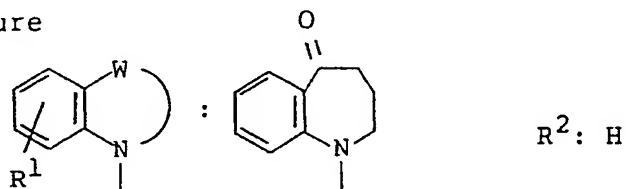
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 161 - 164°C

Form: Free

Example 509

Structure



Crystalline form: Colorless prisms

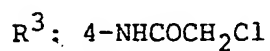
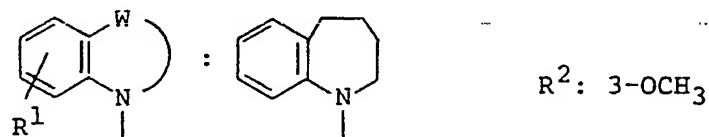
Recrystallization solvent: Ethanol

Melting Point: 242 - 243°C

Form: Free

Example 510

Structure



Crystalline form: White powder

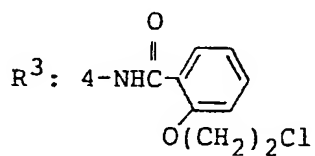
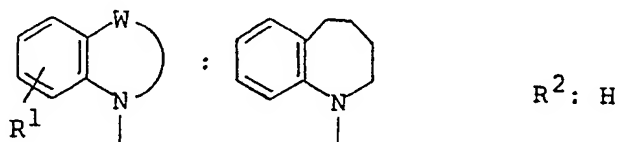
Recrystallization solvent: Dichloroethane/diethyl ether

Melting Point: 186 - 188°C

Form: Free

Example 511

Structure



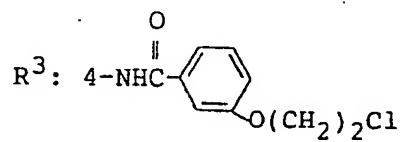
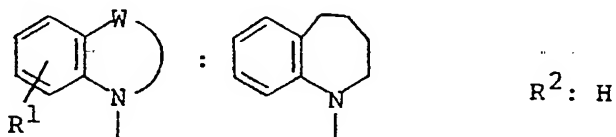
Crystalline form: Colorless amorphous

NMR analysis: 78)

Form: Free

Example 512

Structure



Crystalline form: Colorless amorphous

NMR analysis: 79)

Form: Free

- 49) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.11 (3H, t, $J=7.1$ Hz), 1.90-2.25 (2H, m), 2.29 (3H, s), 2.55 (2H, q, $J=7.1$ Hz), 3.62-3.90 (2H, m), 4.00-4.20 (1H, m), 6.63 (1H, d, $J=7.9$ Hz), 6.85-7.10 (2H, m), 7.25-7.80 (9H, m), 8.25 (1H, brs)
- 50) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10 (3H, t, $J=7.1$ Hz), 1.90-2.20 (2H, m), 2.28 (3H, s), 3.60-3.90 (2H, m), 3.95-4.20 (1H, m), 6.62 (1H, d, $J=7.9$ Hz), 6.80-7.10 (2H, m), 7.20 (2H, d, $J=8.6$ Hz), 7.31-7.55 (4H, m), 7.80 (2H, d, $J=1.9$ Hz), 9.05 (1H, brs)
- 51) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.80-2.05 (1H, m), 2.15-2.50 (1H, m), 2.34 (6H, s), 2.51 (3H, s), 3.48-3.62 (1H, m), 3.72 (3H, s), 3.70-3.85 (1H, m), 4.00-4.22 (1H, m), 6.64 (1H, d, $J=7.8$ Hz), 6.84-7.58 (9H, m), 8.16 (1H, brs), 8.40 (1H, d, $J=8.7$ Hz)
- 52) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.16 (3H, t, $J=7.1$ Hz), 2.40-2.70 (2H, m), 2.90-3.30 (3H, m), 3.80-4.20 (2H, m), 4.80-5.00 (1H, m), 6.60-6.80 (1H, m), 7.00-7.70 (10H, m), 8.24 (1H, s)
- 53) $^1\text{H-NMR}(\text{DMSO}-d_6)$ δ ; 1.0-2.5 (10H, m), 2.34 (3H, s), 3.30-3.80 (4H, m), 4.50-5.30 (3H, m), 6.70-7.00 (1H, m), 7.10-7.80 (11H, m), 10.43 (1H, s), 10.5-12.0 (1H, br)
- 54) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10-2.10 (10H, m), 2.40-2.70 (1H, m), 2.80-3.20 (3H, m), 3.92 (2H, s), 4.90-5.20 (1H, m), 6.50-6.70 (1H, m), 6.80-7.60 (8H, m), 7.75

- (2H, s), 8.73 (1H, s)
- 55) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10-2.20 (10H, m), 2.40-2.70 (1H, m), 2.90-3.30 (3H, m), 3.93 (2H, s), 4.90-5.20 (1H, m), 6.62 (1H, d, $J=7.6$ Hz), 6.90-7.70 (10H, m), 8.29 (1H, s)
- 56) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.50-2.10 (2H, m), 2.38 (6H, s), 2.30-2.70 (1H, m), 2.70-3.00 (2H, m), 3.45 (1H, d, $J=13$ Hz), 3.81 (1H, d, $J=14$ Hz), 4.70-5.00 (1H, m), 7.0-7.50 (12H, m), 8.23 (1H, s)
- 57) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.50-2.10 (2H, m), 2.42 (3H, s), 2.40-2.70 (1H, m), 2.80-3.00 (2H, m), 3.52 (1H, d, $J=13$ Hz), 3.85 (1H, d, $J=13$ Hz), 4.70-5.00 (1H, m), 7.00-7.70 (12H, m), 8.54 (1H, s)
- 58) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.43 (3H, s), 2.47 (3H, s), 3.00-3.30 (3H, m), 3.76 (1H, d, $J=14$ Hz), 4.06 (1H, d, $J=14$ Hz), 4.90-5.20 (1H, m), 6.50-6.80 (3H, m), 6.90-7.50 (6H, m), 7.70-8.00 (2H, m), 8.48 (1H, d, $J=8$ Hz), 10.58 (1H, s)
- 59) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.41 (3H, s), 2.44 (3H, s), 2.90-3.20 (3H, m), 3.74 (1H, d, $J=13$ Hz), 4.07 (1H, d, $J=14$ Hz), 4.80-5.00 (1H, m), 6.67 (1H, d, $J=7$ Hz), 6.76 (1H, d, $J=7$ Hz), 7.00-7.50 (8H, m), 7.55 (1H, s), 7.70-7.90 (2H, m)
- 60) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.41 (3H, s), 2.80-3.20 (3H, m), 3.73 (1H, d, $J=13$ Hz), 4.03 (1H, d, $J=14$ Hz), 6.66 (2H, d, $J=7.6$ Hz), 6.90-8.00 (10H, m), 8.57 (1H, s)

- 61) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.40 (3H, s), 2.90-3.20 (3H, m), 3.73 (1H, d, $J=13$ Hz), 4.07 (1H, d, $J=13$ Hz), 4.70-5.00 (1H, m), 6.60-6.80 (2H, m), 6.90-8.00 (10H, m), 8.54 (1H, s)
- 62) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.41 (3H, s), 2.90-3.20 (3H, m), 3.75 (1H, d, $J=14$ Hz), 4.08 (1H, d, $J=14$ Hz), 4.80-5.00 (1H, m), 6.67 (1H, d, $J=7.6$ Hz), 6.82 (1H, d, $J=7.6$ Hz), 6.90-7.90 (10H, m), 8.08 (1H, s)
- 63) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.23 (3H, t, $J=7$ Hz), 1.40-1.70 (1H, m), 1.90-2.20 (3H, m), 2.70-3.30 (3H, m), 3.40-3.60 (5H, m), 3.91 (2H, s), 5.00-5.20 (1H, m), 6.60-7.40 (11H, m), 8.12 (1H, d, $J=8$ Hz), 8.99 (1H, s)
- 64) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.35-1.70 (1H, m), 1.80-2.20 (3H, m), 2.25-2.35 (1H, m), 2.65-3.20 (3H, m), 4.01 (2H, s), 4.05-4.17 (2H, m), 4.90-5.10 (1H, m), 6.61 (1H, d, $J=7.5$ Hz), 6.75-7.50 (12H, m), 8.44 (1H, brs)
- 65) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.13 (3H, t, $J=7.0$ Hz), 1.30-1.65 (4H, m), 1.80-2.20 (3H, m), 2.28 (3H, s), 2.65-3.40 (5H, m), 4.90-5.10 (1H, m), 6.63 (1H, d, $J=7.8$ Hz), 6.75-7.00 (3H, m), 7.00-7.45 (8H, m), 8.85 (1H, brs)
- 66) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 0.88 (3H, t, $J=7.4$ Hz), 1.16 (3H, t, $J=7.0$ Hz), 1.35-2.20 (6H, m), 2.27 (3H, s), 2.60-3.20 (3H, m), 3.20-3.45 (2H, m), 3.85-4.10 (1H, m), 4.90-5.10 (1H, m), 6.63 (1H, d, $J=7.4$ Hz),

- 6.77 (2H, d, J=8.5 Hz), 6.92 (1H, t, J=8.0 Hz),
7.00-7.45 (8H, m), 8.85 (1H, brs)
- 67) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.17 (3H, t, J=7.0 Hz), 1.35-1.65
(4H, m), 2.60-3.45 (5H, m), 4.20 (2H, q, J=7.0 Hz),
4.90-5.10 (1H, m), 6.63 (1H, d, J=7.6 Hz), 6.80-
7.45 (12H, m), 8.66 (1H, brs)
- 68) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 0.96 (6H, d, J=6.6 Hz), 1.35-1.65
(1H, m), 1.80-2.25 (4H, m), 2.65-3.15 (3H, m), 3.19
(2H, d, J=7.3 Hz), 3.99 (2H, s), 4.90-5.10 (1H, m),
6.60 (1H, d, J=7.8 Hz), 6.75-7.05 (4H, m), 7.05-
7.40 (8H, m), 8.15 (1H, brs)
- 69) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.19 (3H, t, J=7.0 Hz), 1.35-1.65
(1H, m), 1.80-2.25 (3H, m), 2.70-3.20 (3H, m), 3.44
(2H, q, J=7.0 Hz), 3.77 (3H, s), 3.87 (2H, s),
4.90-5.10 (1H, m), 6.25-6.50 (3H, m), 6.67 (1H, d,
J=7.5 Hz), 6.85-7.45 (8H, m), 8.29 (1H, brs)
- 70) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.05 (3H, t, J=7.1 Hz), 1.35-1.65
(1H, m), 1.85-2.25 (3H, m), 2.65-3.30 (5H, m), 3.74
(2H, s), 4.95-5.15 (1H, m), 6.63 (1H, d, J=7.5 Hz),
6.80-7.55 (11H, m), 9.51 (1H, brs)
- 71) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.30-1.65 (1H, m), 1.80-2.30 (3H,
m), 2.65-3.15 (3H, m), 3.75 (2H, s), 3.74 (2H, s),
4.95-5.10 (1H, m), 6.45-6.70 (3H, m), 6.88 (1H, t,
J=6.8 Hz), 7.00-7.45 (8H, m), 8.74 (1H, brs)
- 72) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.30-1.70 (1H, m), 1.75-2.25 (6H,
m), 2.65-3.15 (3H, m), 3.78 (2H, d, J=5.4 Hz), 4.28

- (2H, d, J=5.5 Hz), 4.53 (1H, brs), 4.90-5.10 (1H, m), 5.89 (1H, brs), 6.50-6.70 (3H, m), 6.89 (1H, t, J=7.5 Hz), 7.00-7.40 (8H, m), 8.61 (1H, brs)
- 73) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.35-1.65 (1H, m), 1.70-2.20 (8H, m), 2.65-3.20 (3H, m), 3.25-3.55 (4H, m), 3.88 (2H, s), 4.90-5.10 (1H, m), 5.79 (1H, brs), 6.55-7.40 (13H, m), 8.37 (1H, brs)
- 74) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.35-2.00 (8H, m), 2.65-3.20 (3H, m), 3.30-3.35 (2H, m), 3.60-3.85 (2H, m), 3.90 (2H, s), 4.95-5.15 (1H, m), 6.55-7.00 (5H, m), 7.00-7.40 (8H, m), 7.65-7.90 (4H, m), 8.22 (1H, brs)
- 75) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.16 (3H, t, J=7.0 Hz), 2.39 (3H, s), 2.80-3.20 (3H, m), 3.44 (2H, q, J=7.0 Hz), 3.65-4.20 (4H, m), 4.80-5.05 (1H, m), 6.50-7.45 (13H, m), 8.50 (1H, brs)
- 76) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.23 (3H, t, J=7.0 Hz), 2.41 (3H, s), 2.75-3.20 (3H, m), 3.40-3.60 (5H, m), 3.65-3.90 (1H, m), 3.92 (2H, s), 3.90-4.20 (1H, m), 4.85-5.10 (1H, m), 6.65-7.45 (11H, m), 8.13 (1H, d, J=8.4 Hz), 9.01 (1H, brs)
- 77) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.80-1.95 (1H, m), 2.20-2.70 (10H, m), 3.50-3.60 (1H, m), 3.63-3.80 (1H, m), 4.00-4.15 (1H, m), 6.60 (1H, d, J=7.6 Hz), 6.92 (1H, t, J=7.6 Hz), 7.02 (1H, t, J=6.3 Hz), 7.20-7.65 (9H, m), 7.87 (1H, brs)
- 78) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.40-1.62 (1H, m), 1.84-2.22 (3H,

m), 2.65-3.19 (3H, m), 3.97 (2H, t, J=4.9 Hz), 4.43 (2H, t, J=4.9 Hz), 4.95-5.18 (1H, m), 6.60-6.77 (1H, m), 6.85-7.02 (2H, m), 7.02-7.30 (5H, m), 7.40-7.68 (3H, m), 8.20-8.32 (1H, m), 9.62-9.81 (1H, m)

79) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.38-1.65 (1H, m), 1.84-2.21 (3H, m), 2.64-3.15 (3H, m), 3.81 (2H, t, J=5.7 Hz), 4.25 (2H, t, J=5.7 Hz), 4.90-5.13 (1H, m), 6.58-6.71 (1H, m), 6.82-7.00 (1H, m), 7.00-7.52 (10H, m), 8.11 (1H, brs)

Example 513

To a solution of 1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (1.06 g) in dichloromethane (80 ml) is added o-methylphenyl isocyanate (0.66 g) under ice-cooling. The mixture is stirred at room temperature for 4 hours. After completion of the reaction, the solvent is concentrated under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; n-hexane : ethyl acetate = 1 : 1), and recrystallized from ethyl acetate to give 1-[4-(2-methylanilinocarbonylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.97 g) as white powder, m.p. 182 - 182.5°C.

Using the suitable starting materials, the compounds of the above Examples 491 - 492 are obtained in the same manner as in Example 513.

Example 514

A mixture of 1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (0.50 g), phenylsulfonyl chloride (0.29 ml), triethylamine (0.32 ml) and dichloromethane (30 ml) is stirred at room temperature overnight. The reaction mixture is washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; chloroform), and recrystallized from methanol/diethyl ether to give 1-(4-phenylsulfonylaminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (0.27 g) as colorless prisms, m.p. 178 - 182.5°C.

Using the suitable starting materials, the compounds of the above Examples 469 - 471, 498, 502 and 503 are obtained in the same manner as in Example 514.

Example 515

To a solution of 1-[4-(4-piperidinylcarbonylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g) in dimethylformamide (20 ml) is added 60 % sodium hydride dispersion in mineral oil (82 mg) and the mixture is stirred at room temperature for 30 minutes. Thereto is added methyl iodide (0.14 ml) and the mixture is stirred at room temperature overnight. The solvent is distilled off and the resulting residue is extracted with chloroform, and washed successively with water and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off

and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol = 10 : 1), and recrystallized from methanol/n-hexane to give 1-[4-[N-(1-methyl-4-piperidinylcarbonyl)-N-methylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.03 g) as light yellow powder, m.p. 194.5 - 197°C.

Using the suitable starting materials, the compounds of the above Examples 497 and 501 are obtained in the same manner as in Example 515.

Example 516

6-Fluoro-1-(4-aminobenzoyl)-1,2,3,4-tetrahydroquinoline (0.15 g) is dissolved in dichloromethane (10 ml) and thereto is added triethylamine (0.31 ml).. To the mixture is added dropwise a solution of 3,5-dichlorobenzoyl chloride (0.14 g) in dichloromethane (2.0 ml) under ice-cooling, and the mixture is stirred for 30 minutes under ice-cooling, and further, at room temperature for 1 hour. To the mixture are added triethylamine (0.31 ml) and 3,5-dichlorobenzoyl chloride (0.14 ml). The mixture is stirred at room temperature for 4 hours. The reaction mixture is washed with water, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 1 : 5 + 1 : 4), and recrystallized from ethyl acetate/n-hexane to give 6-fluoro-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

(0.12 g) and 6-fluoro-1-{4-[bis-(3,5-dichlorobenzoyl)amino]-benzoyl}-1,2,3,4-tetrahydroquinoline.

The former: White powder, m.p. 205.5 - 206.5°C

The latter: White powder, m.p. 210.5 - 212°C

Example 517

Using the suitable starting materials, the compounds of the above Examples 450 and 504 are obtained in the same manner as in Example 378.

Example 518

Using the suitable starting materials, the compounds of the above Examples 450 - 467, 495, 496, 499, 500, 511 and 512 are obtained in the same manner as in Example 380.

Example 519

Using the suitable starting materials, the compounds of the above Examples 449, 474 - 489, 493 and 494 are obtained in the same manner as in Example 394.

Example 520

Using the suitable starting materials, the compounds of the above Examples 453, 455, 457, 459, 460, 463 - 467, 495, 496 and 499 are obtained in the same manner as in Example 397.

Example 521

Using the suitable starting materials, the compound of the above Example 461 is obtained in the same manner as

in Example 396.

Example 522

Using the suitable starting materials, the compound of the above Example 456 is obtained in the same manner as in Example 398.

Example 523

Using the suitable starting materials, the compound of the above Example 459 is obtained in the same manner as in Example 399.

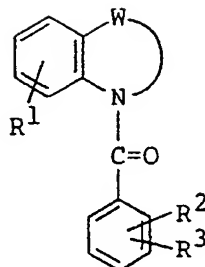
Example 524

Using the suitable starting materials, the compounds of the above Examples 495 and 496 are obtained in the same manner as in Examples 400 and 401.

Example 525

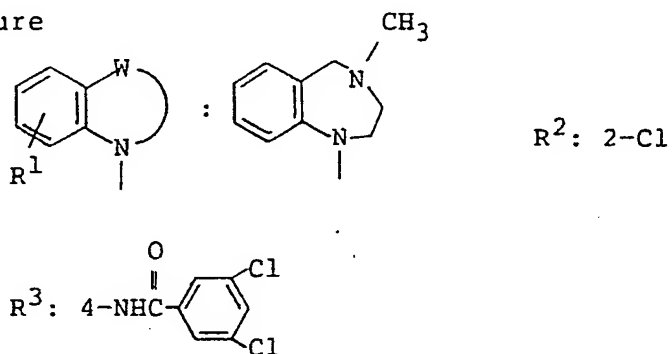
Using the suitable starting materials, the compound of the above Example 458 is obtained in the same manner as in Example 402.

Using the suitable starting materials, the compounds of the following Table 3 are obtained in the same manner as in Examples 1 and 382.

Table 3

Example 527

Structure



Crystalline form: White powder

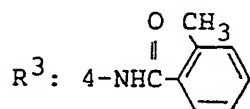
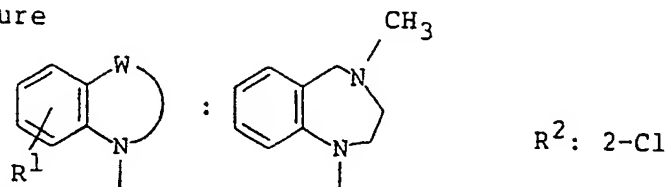
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 225 - 226°C

Form: Free

Example 528

Structure



Crystalline form: White powder

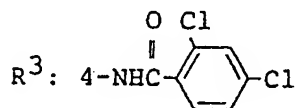
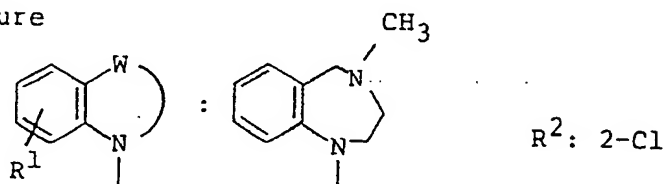
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 142.5 - 145°C

Form: Free

Example 529

Structure



Crystalline form: White powder

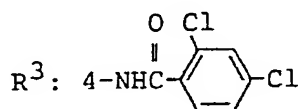
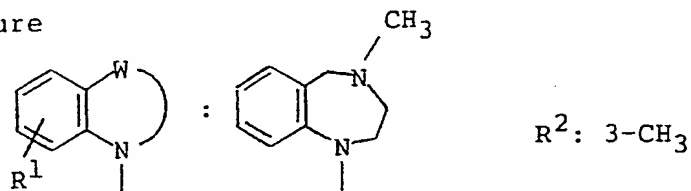
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 213 - 215°C

Form: Free

Example 530

Structure



Crystalline form: White powder

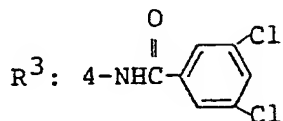
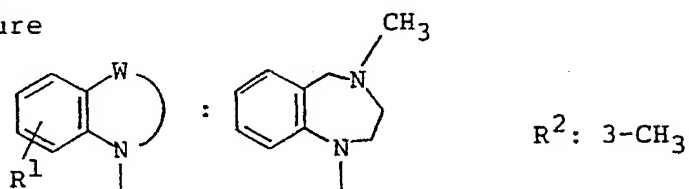
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 167 - 167.5°C

Form: Free

Example 531

Structure



Crystalline form: Colorless scales

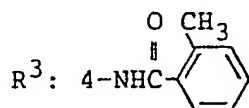
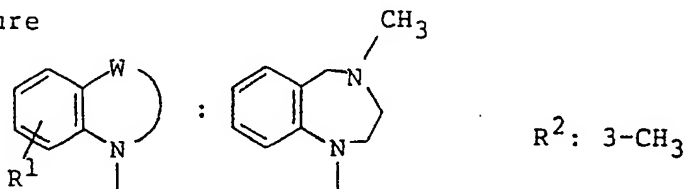
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 217 - 221°C

Form: Free

Example 532

Structure



Crystalline form: White powder

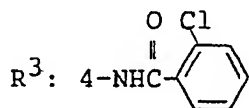
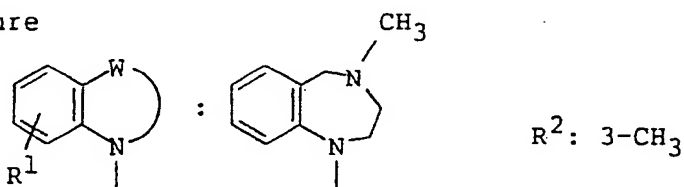
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 182 - 184°C

Form: Free

Example 533

Structure



Crystalline form: White powder

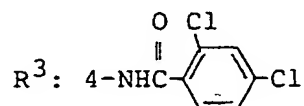
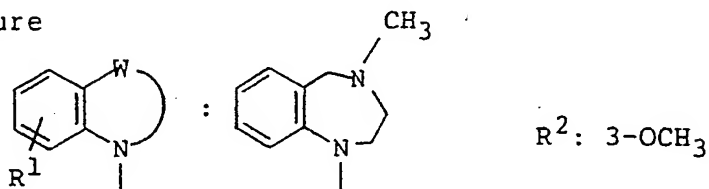
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 209 - 210°C

Form: Free

Example 534

Structure



Crystalline form: White powder

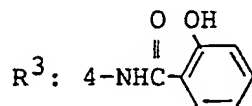
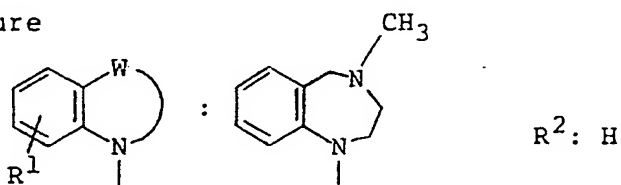
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 148 - 149°C

Form: Free

Example 535

Structure



Crystalline form: White powder

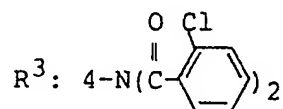
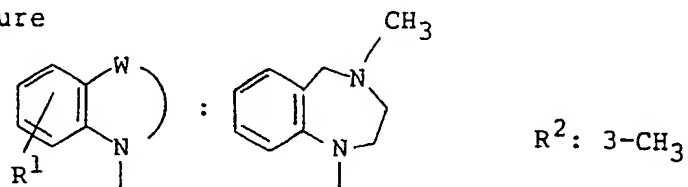
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 202 - 203°C

Form: Free

Example 536

Structure



Crystalline form: White powder

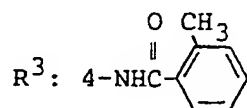
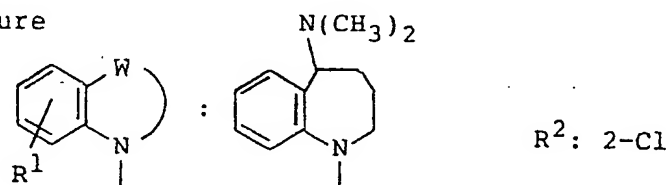
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 218 - 219°C

Form: Free

Example 537

Structure



Crystalline form: White powder

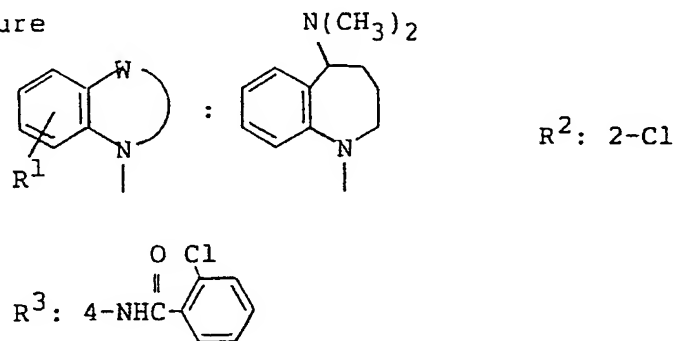
Recrystallization solvent: Methanol/n-hexane

Melting Point: 159 - 160°C

Form: Free

Example 538

Structure



Crystalline form: White powder

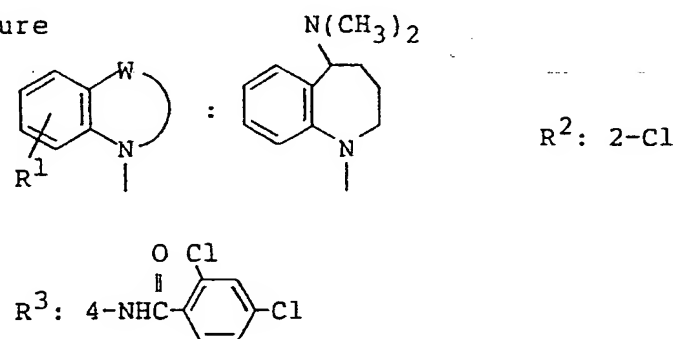
Recrystallization solvent: Methanol/n-hexane

Melting Point: 201 - 202°C

Form: Free

Example 539

Structure



Crystalline form: White powder

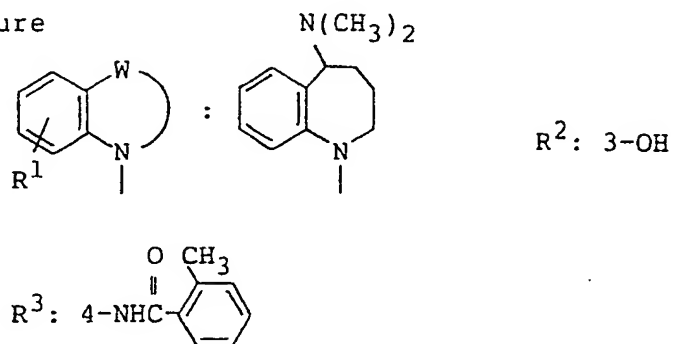
Recrystallization solvent: Methanol/n-hexane

Melting Point: 205 - 207°C

Form: Free

Example 540

Structure



Crystalline form: White powder

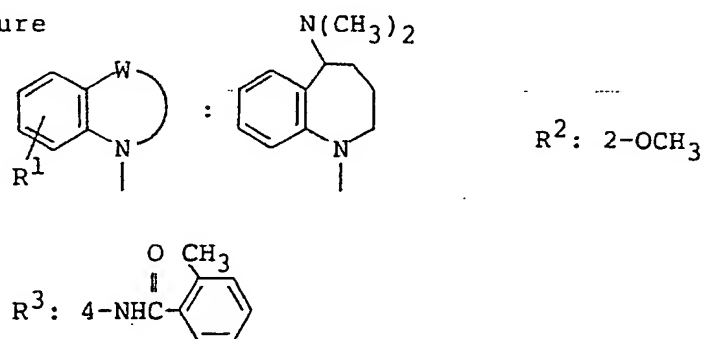
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 201.5 - 202.5°C

Form: Free

Example 541

Structure



Crystalline form: White powder

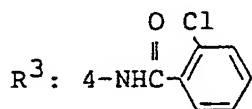
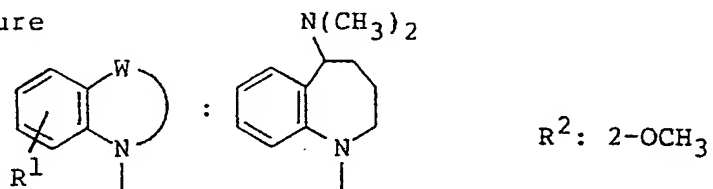
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 226 - 228°C

Form: Free

Example 542

Structure



Crystalline form: White powder

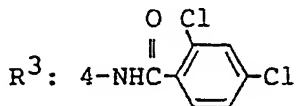
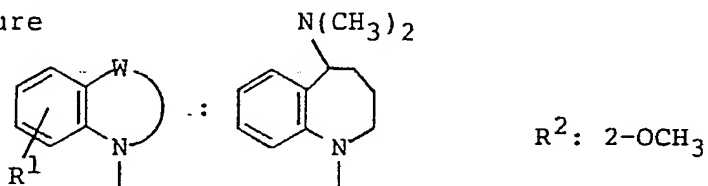
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 218 - 221°C

Form: Free

Example 543

Structure



Crystalline form: White powder

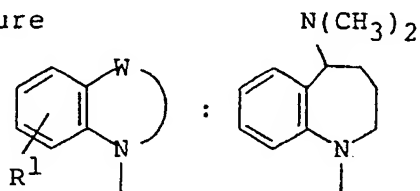
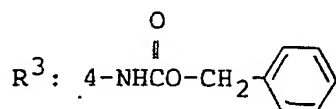
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 156 - 157°C

Form: Free

Example 544

Structure

 $\text{R}^2: 2\text{-OCH}_3$ 

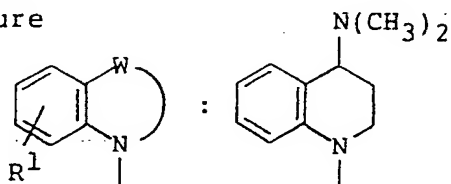
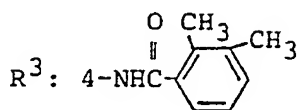
Crystalline form: White powder

NMR analysis: 80)

Form: Free

Example 545

Structure

 $\text{R}^2: 3\text{-OCH}_3$ 

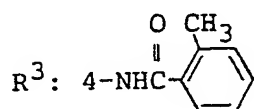
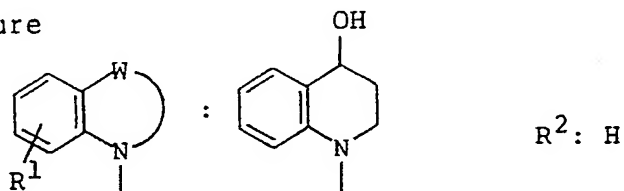
Crystalline form: Colorless amorphous

NMR analysis: 81)

Form: Free

Example 546

Structure



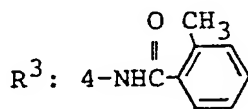
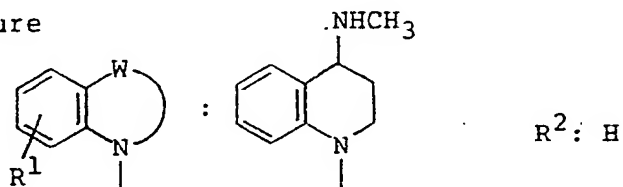
Crystalline form: Colorless amorphous

NMR analysis: 82)

Form: Free

Example 547

Structure



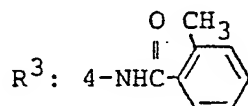
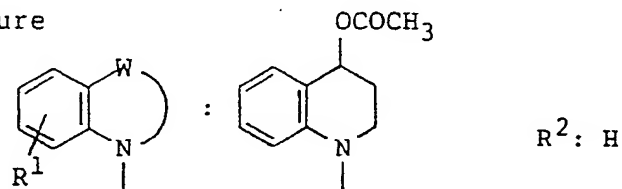
Crystalline form: Light yellow amorphous

NMR analysis: 83)

Form: Free

Example 548

Structure



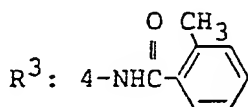
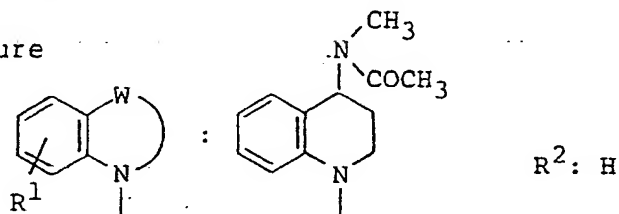
Crystalline form: Colorless amorphous

NMR analysis: 84)

Form: Free

Example 549

Structure



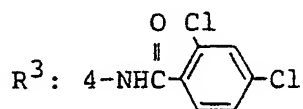
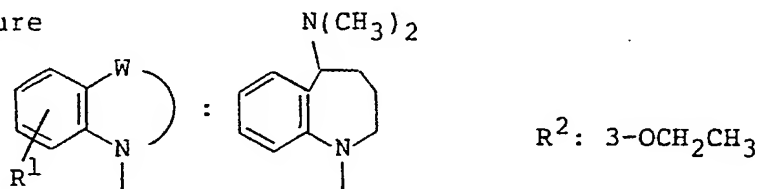
Crystalline form: Colorless amorphous

NMR analysis: 85)

Form: Free

Example 550

Structure



Crystalline form: White powder

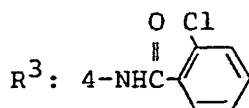
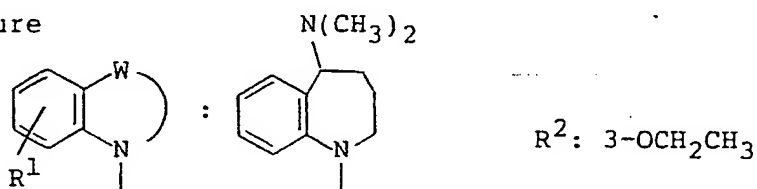
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 135 - 136°C

Form: Free

Example 551

Structure



Crystalline form: Colorless prisms

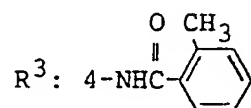
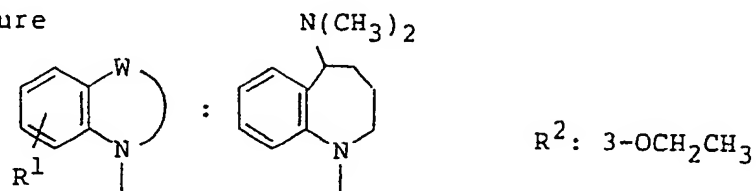
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 122 - 123°C

Form: Free

Example 552

Structure



Crystalline form: Colorless prisms

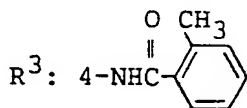
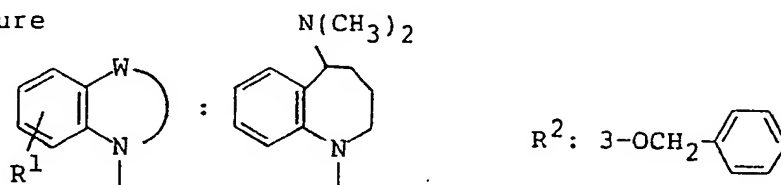
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 118 - 119°C

Form: Free

Example 553

Structure



Crystalline form: Colorless prisms

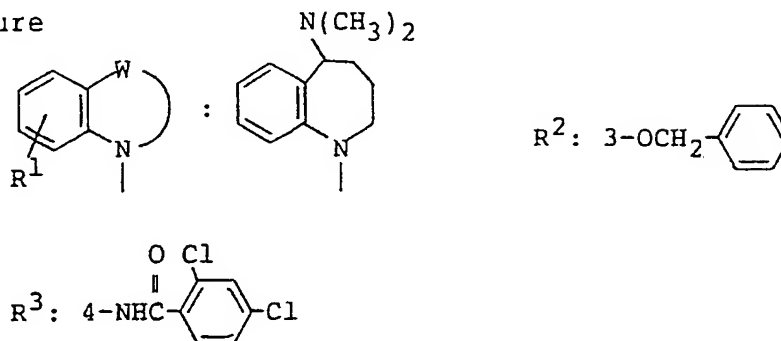
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 145 - 147°C

Form: Free

Example 554

Structure



Crystalline form: Light yellow needles

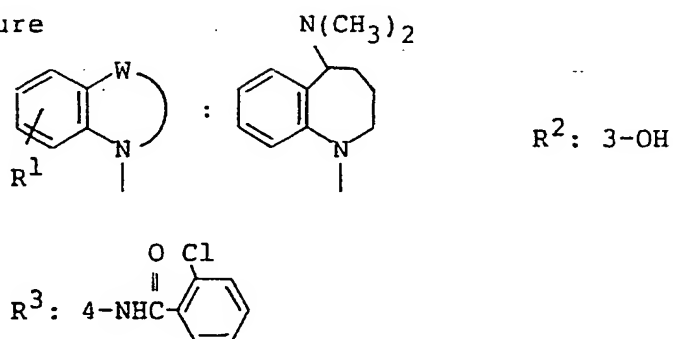
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 169.5 - 170.5°C

Form: Free

Example 555

Structure



Crystalline form: Colorless prisms

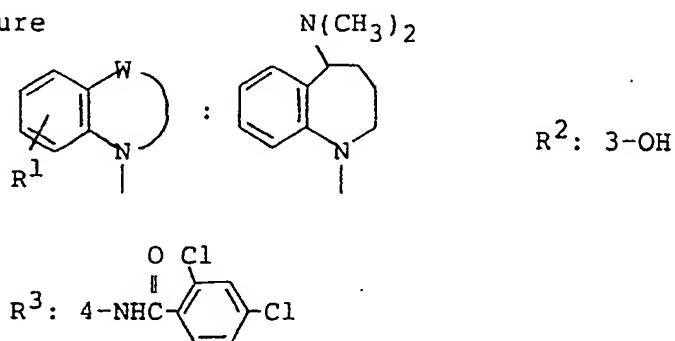
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 194 - 195°C

Form: Free

Example 556

Structure



Crystalline form: Colorless needles

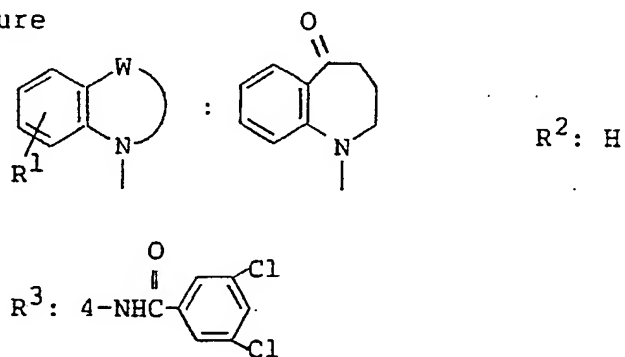
Recrystallization solvent: n-Hexane/ethyl acetate

Melting Point: 202 - 204°C

Form: Free

Example 557

Structure



Crystalline form: Colorless prisms

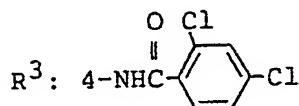
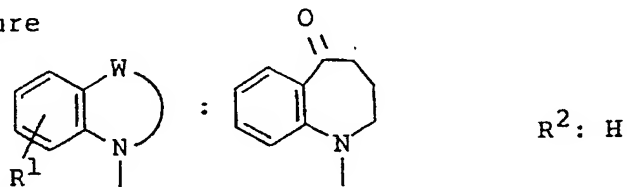
Recrystallization solvent: Ethanol

Melting Point: 242 - 243°C

Form: Free

Example 558

Structure



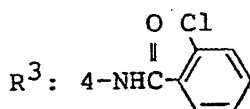
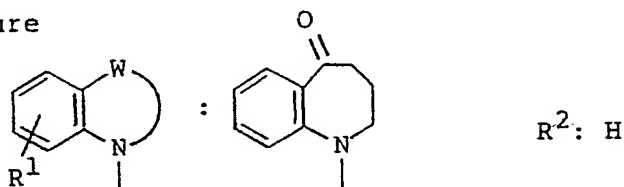
Crystalline form: Light yellow powder

NMR analysis: 86)

Form: Free

Example 559

Structure



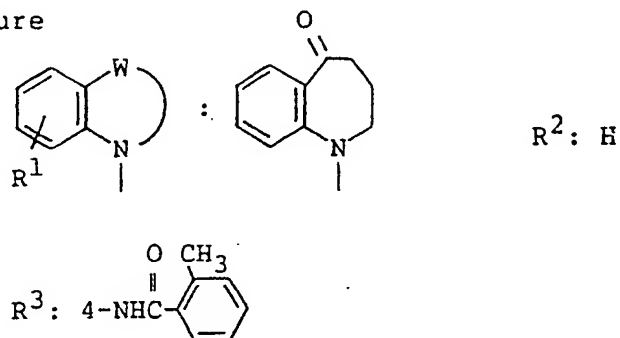
Crystalline form: Light yellow powder

NMR analysis: 87)

Form: Free

Example 560

Structure



Crystalline form: Colorless needles

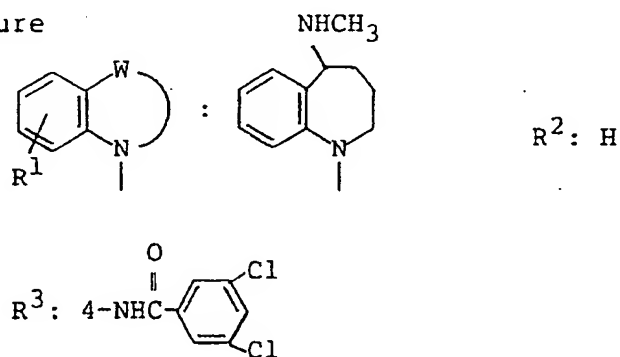
Recrystallization solvent: Ethanol

Melting Point: 237 - 238°C

Form: Free

Example 561

Structure



Crystalline form: Colorless prisms

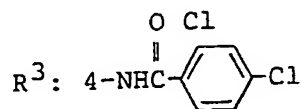
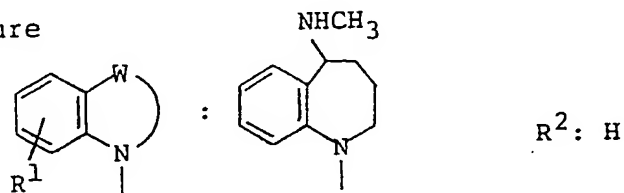
Recrystallization solvent: Dioxane

Melting Point: 258 - 259°C

Form: Free

Example 562

Structure



Crystalline form: Colorless prisms

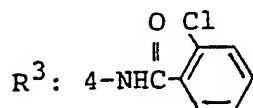
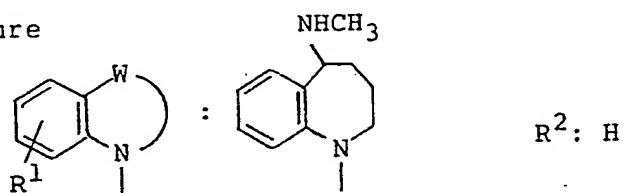
Recrystallization solvent: Ethanol

Melting Point: 182.5 - 183.5°C

Form: Free

Example 563

Structure



Crystalline form: Colorless prisms

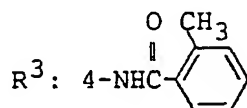
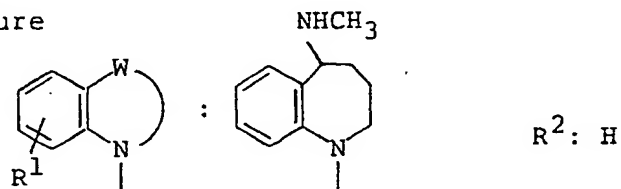
Recrystallization solvent: Ethanol

Melting Point: 209 - 211°C

Form: Free

Example 564

Structure



Crystalline form: Colorless prisms

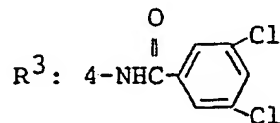
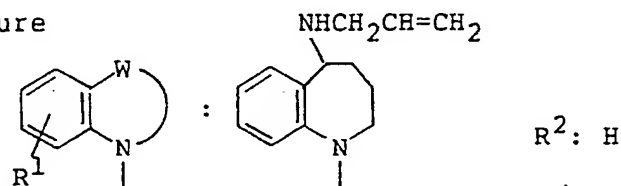
Recrystallization solvent: Dioxane

Melting Point: 210 - 211°C

Form: Free

Example 565

Structure



Crystalline form: Colorless needles

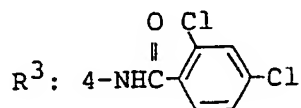
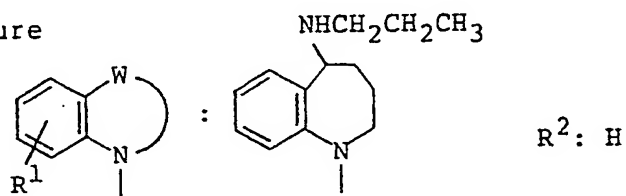
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 176 - 178°C

Form: Free

Example 566

Structure



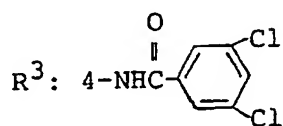
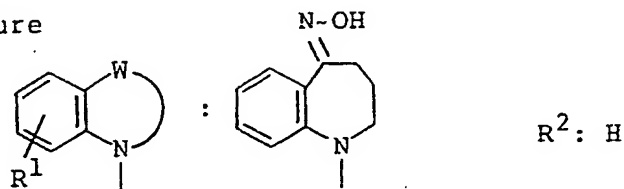
Crystalline form: Light yellow amorphous

NMR analysis: 88)

Form: Free

Example 567

Structure



Crystalline form: White powder

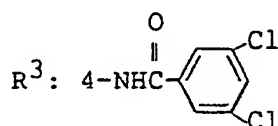
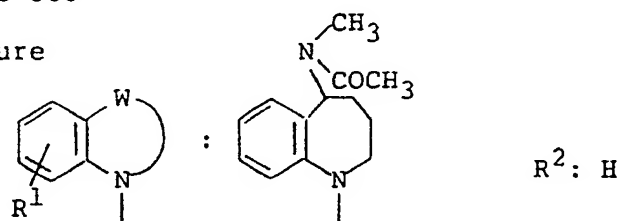
Recrystallization solvent: Dioxane/water

Melting Point: 272 - 273°C

Form: Free

Example 568

Structure



Crystalline form: Colorless prisms

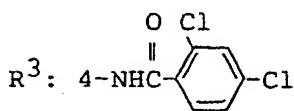
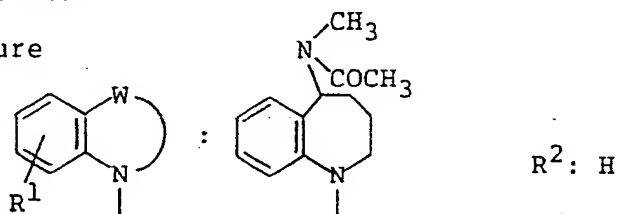
Recrystallization solvent: Dioxane

Melting Point: 253 - 254°C

Form: Free

Example 569

Structure



Crystalline form: Colorless prisms

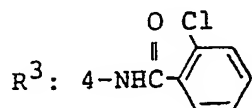
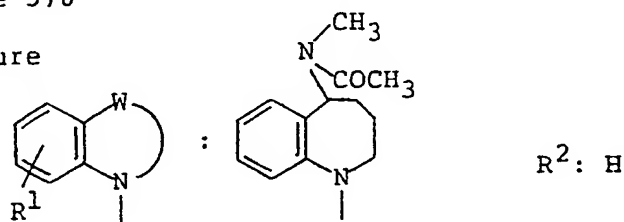
Recrystallization solvent: Ethanol

Melting Point: 248.5 - 249.5°C

Form: Free

Example 570

Structure



Crystalline form: Colorless needles

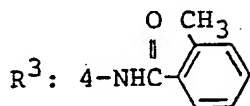
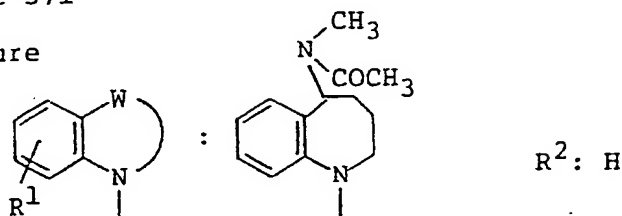
Recrystallization solvent: Ethanol

Melting Point: 266.5 - 267.5°C

Form: Free

Example 571

Structure



Crystalline form: Colorless needles

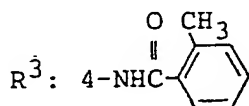
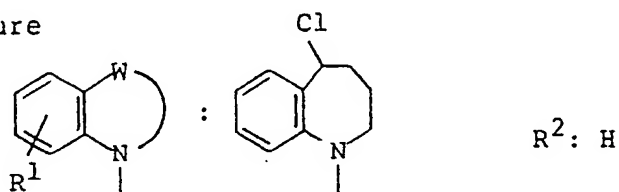
Recrystallization solvent: Ethanol

Melting Point: 252 - 253°C

Form: Free

Example 572

Structure



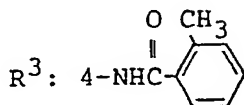
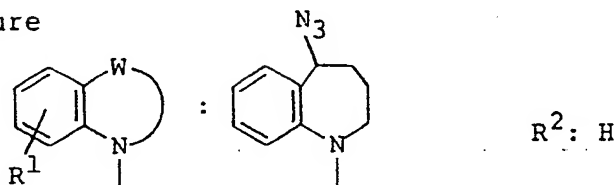
Crystalline form: Light yellow powder

NMR analysis: 89)

Form: Free

Example 573

Structure



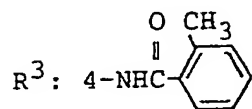
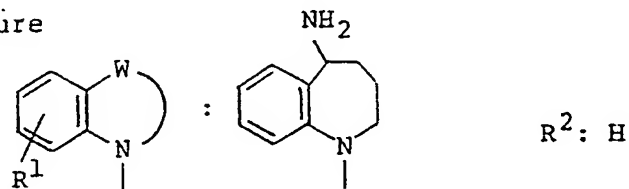
Crystalline form: Light brown powder

NMR analysis: 90)

Form: Free

Example 574

Structure



Crystalline form: White powder

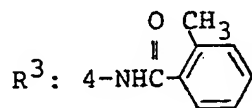
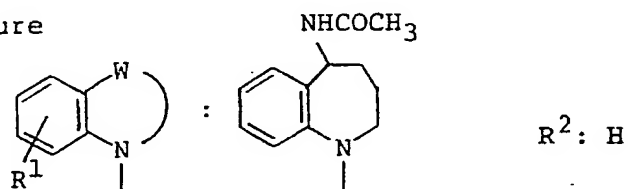
Recrystallization solvent: Diethyl ether

Melting Point: 198.5 - 199.5°C

Form: Free

Example 575

Structure



Crystalline form: Colorless needles

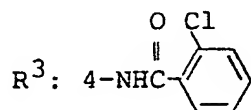
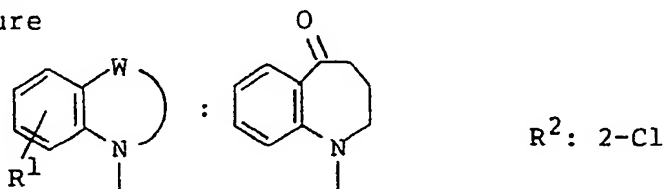
Recrystallization solvent: Ethanol

Melting Point: 297 - 299°C

Form: Free

Example 576

Structure



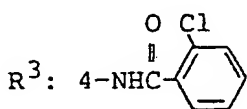
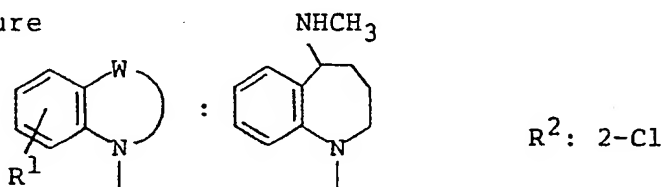
Crystalline form: Colorless amorphous

NMR analysis: 91)

Form: Free

Example 577

Structure



Crystalline form: White powder

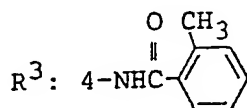
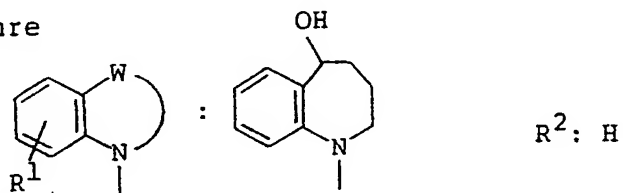
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 202 - 203°C

Form: Free

Example 578

Structure



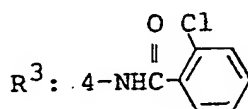
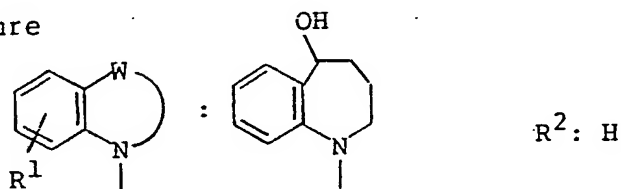
Crystalline form: Colorless amorphous

NMR analysis: 92)

Form: Free

Example 579

Structure



Crystalline form: White powder

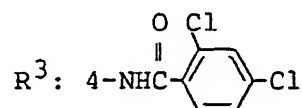
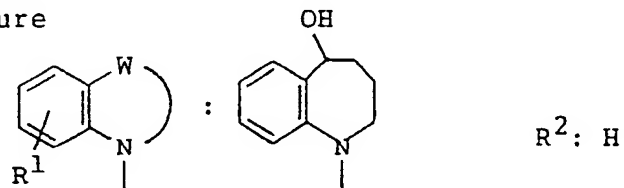
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 232 - 233°C

Form: Free

Example 580

Structure



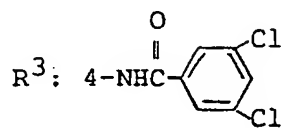
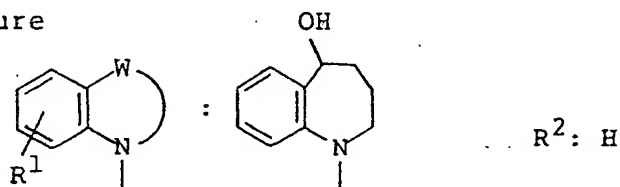
Crystalline form: Colorless amorphous

NMR analysis: 93)

Form: Free

Example 581

Structure



Crystalline form: White powder

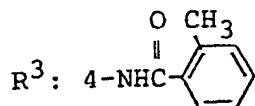
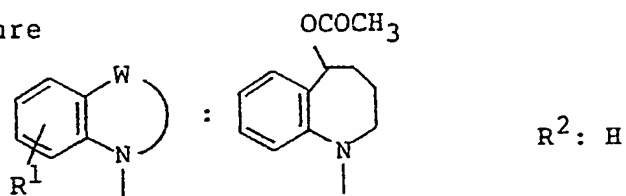
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 256.5 - 257°C

Form: Free

Example 582

Structure



Crystalline form: White powder

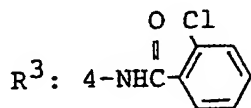
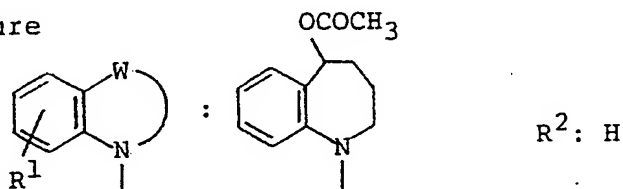
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 193 - 194°C

Form: Free

Example 583

Structure



Crystalline form: White powder

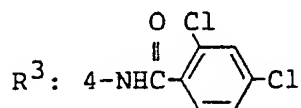
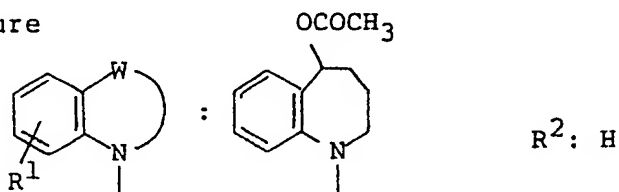
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 227 - 230°C

Form: Free

Example 584

Structure



Crystalline form: White powder

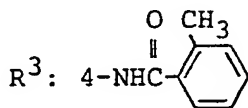
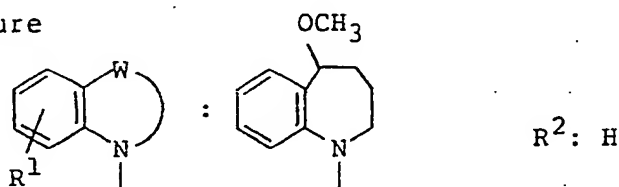
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 199.5 - 202°C

Form: Free

Example 585

Structure



Crystalline form: White powder

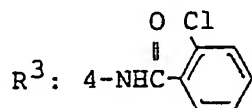
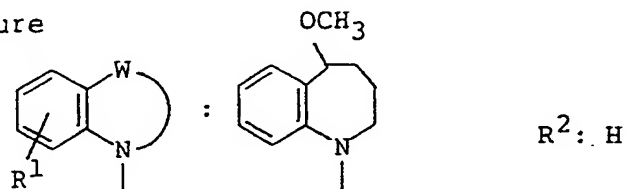
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 219 - 220°C

Form: Free

Example 586

Structure



Crystalline form: White powder

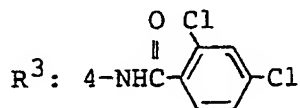
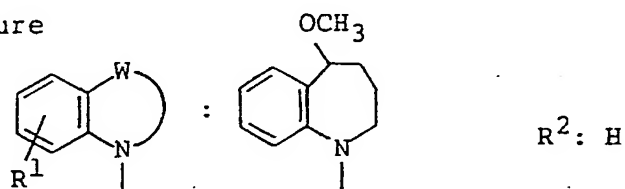
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 190 - 191.5°C

Form: Free

Example 587

Structure



Crystalline form: White powder

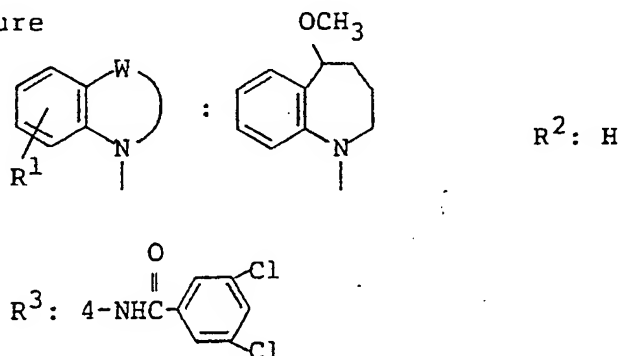
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 184 - 185°C

Form: Free

Example 588

Structure



Crystalline form: White powder

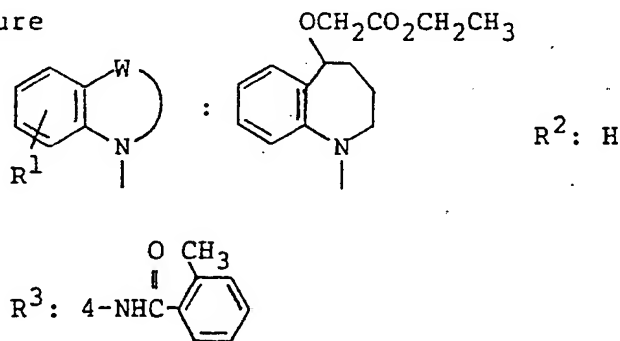
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 223 - 224°C

Form: Free

Example 589

Structure



Crystalline form: White powder

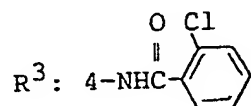
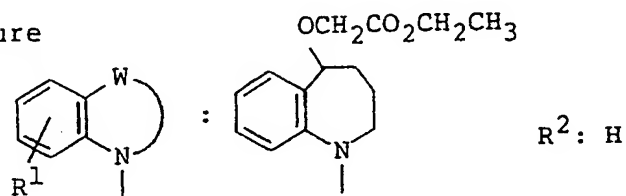
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 178 - 181°C

Form: Free

Example 590

Structure



Crystalline form: Colorless needles

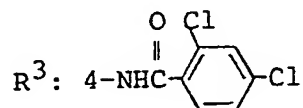
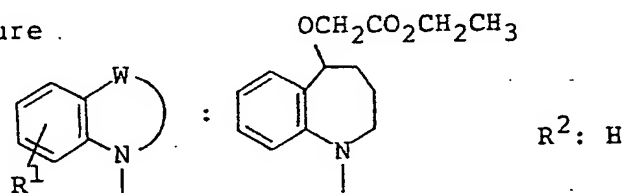
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 168 - 168.5°C

Form: Free

Example 591

Structure



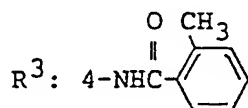
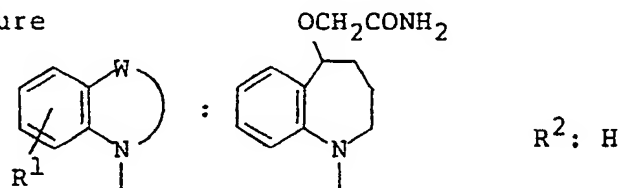
Crystalline form: Colorless amorphous

NMR analysis: 94)

Form: Free

Example 592

Structure



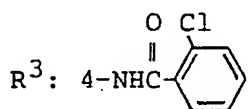
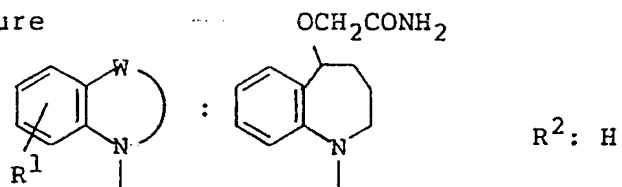
Crystalline form: Colorless amorphous

NMR analysis: 95)

Form: Free

Example 593

Structure



Crystalline form: White powder

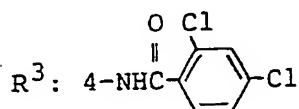
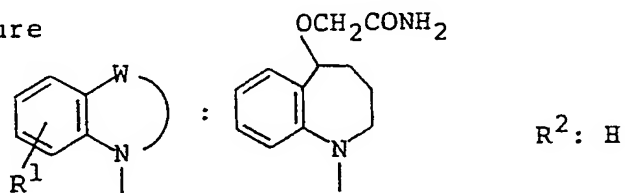
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 196 - 197°C

Form: Free

Example 594

Structure



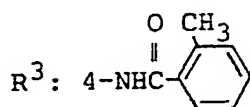
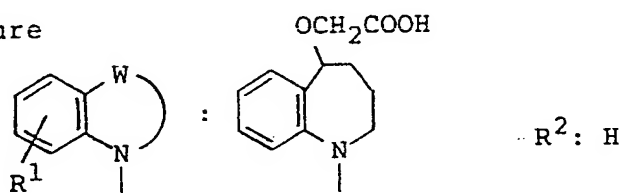
Crystalline form: Colorless amorphous

NMR analysis: 96)

Form: Free

Example 595

Structure



Crystalline form: White powder

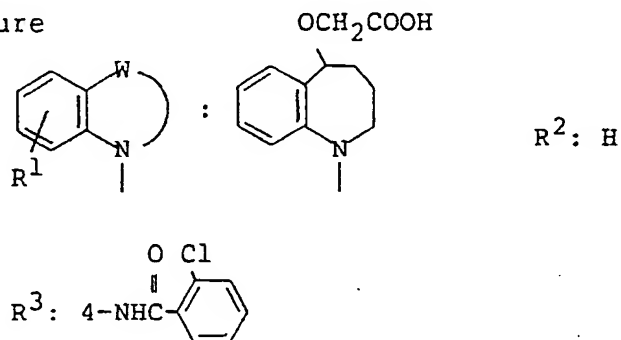
Recrystallization solvent: Ethanol/water

Melting Point: 188 - 189°C

Form: Free

Example 596

Structure



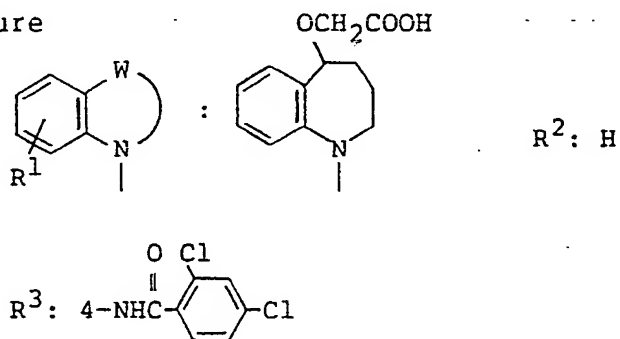
Crystalline form: Colorless amorphous

NMR analysis: 97)

Form: Free

Example 597

Structure



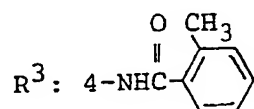
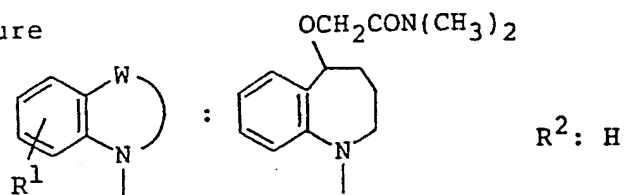
Crystalline form: Colorless amorphous

NMR analysis: 98)

Form: Free

Example 598

Structure



Crystalline form: Colorless prisms

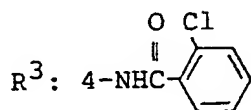
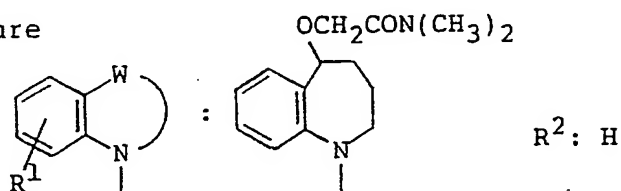
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 203 - 204°C

Form: Free

Example 599

Structure



Crystalline form: White powder

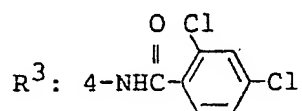
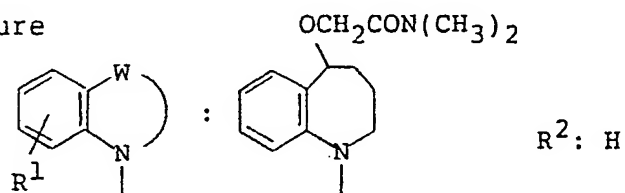
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 196 - 197°C

Form: Free

Example 600

Structure



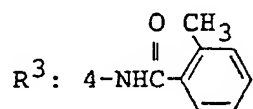
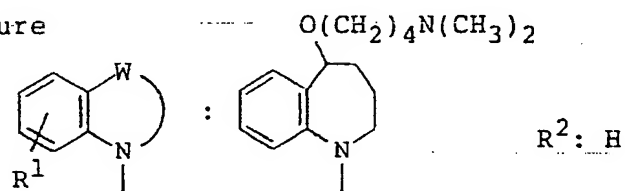
Crystalline form: Colorless amorphous

NMR analysis: 99)

Form: Free

Example 601

Structure



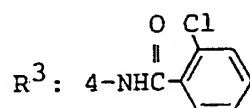
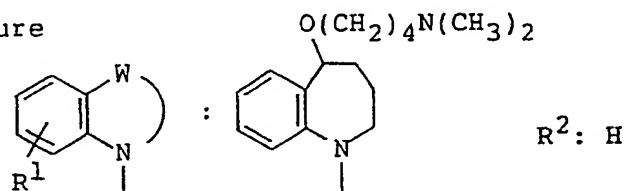
Crystalline form: Colorless amorphous

NMR analysis: 100)

Form: Free

Example 602

Structure



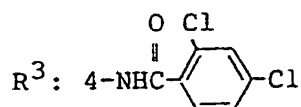
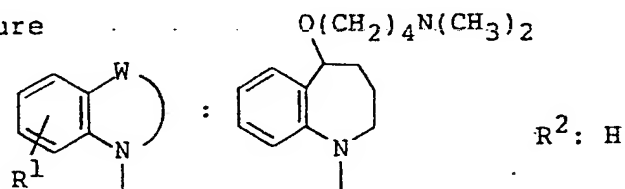
Crystalline form: Colorless amorphous

NMR analysis: 101)

Form: Free

Example 603

Structure



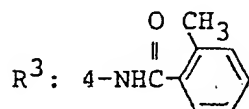
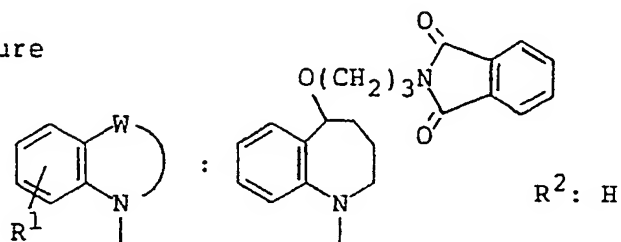
Crystalline form: Colorless amorphous

NMR analysis: 102)

Form: Free

Example 604

Structure



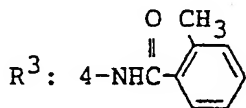
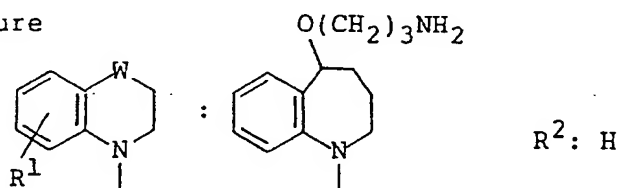
Crystalline form: Colorless amorphous

NMR analysis: 103)

Form: Free

Example 605

Structure



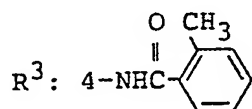
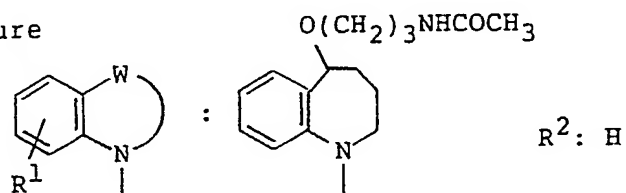
Crystalline form: Colorless amorphous

NMR analysis: 104)

Form: Free

Example 606

Structure



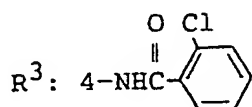
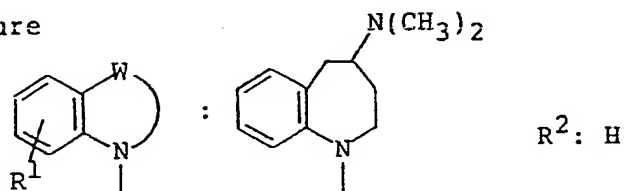
Crystalline form: Colorless amorphous

NMR analysis: 105)

Form: Free

Example 607

Structure



Crystalline form: Colorless needles

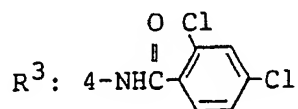
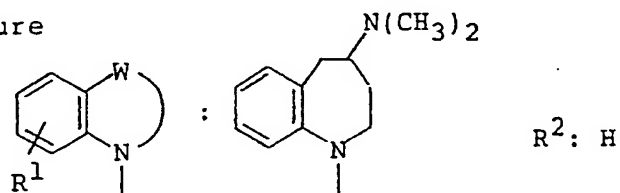
Recrystallization solvent: Ethanol

Melting Point: 169 - 171°C

Form: Free

Example 608

Structure



Crystalline form: Colorless needles

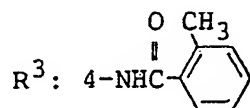
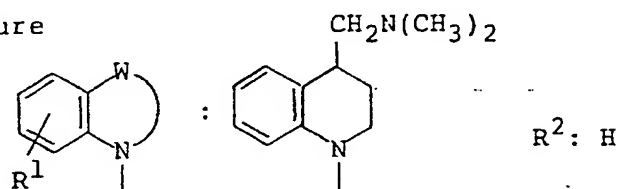
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 178 - 181°C

Form: Free

Example 609

Structure



Crystalline form: White powder

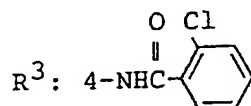
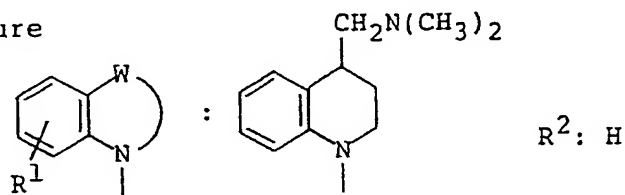
Recrystallization solvent: Ethanol

Melting Point: 187 - 188°C

Form: Free

Example 610

Structure



Crystalline form: White powder

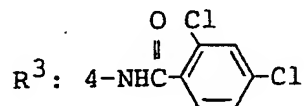
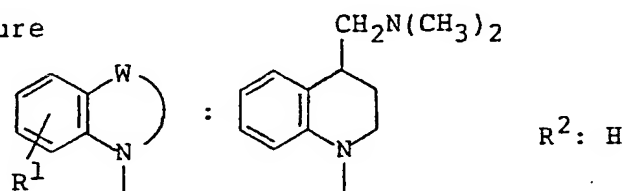
Recrystallization solvent: Ethanol

Melting Point: 181 - 183°C

Form: Free

Example 611

Structure



Crystalline form: White powder

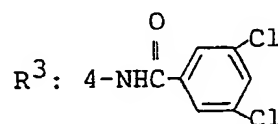
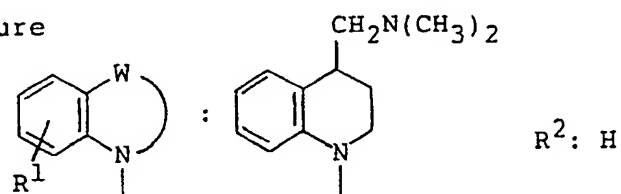
Recrystallization solvent: Ethanol

Melting Point: 124 - 127°C

Form: Free

Example 612

Structure



Crystalline form: White powder

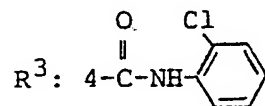
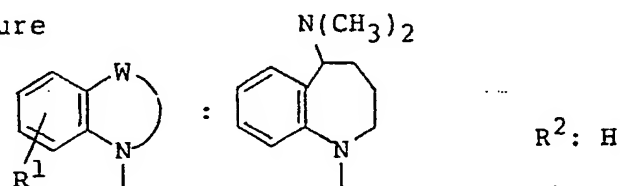
Recrystallization solvent: Ethanol

Melting Point: 179 - 181°C

Form: Free

Example 613

Structure



Crystalline form: White powder

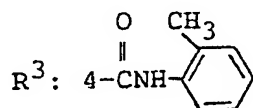
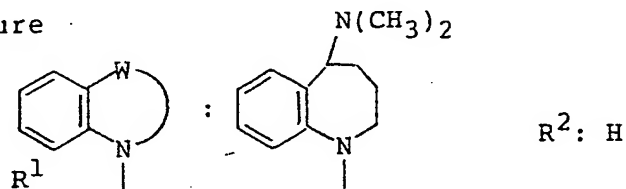
Recrystallization solvent: Ethanol

Melting Point: 148 - 150°C

Form: Free

Example 614

Structure



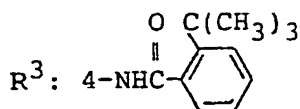
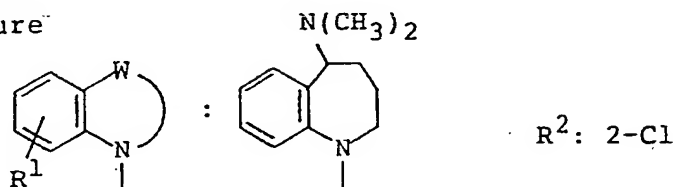
Crystalline form: Colorless amorphous

NMR analysis: 106)

Form: Free

Example 615

Structure



Crystalline form: White powder

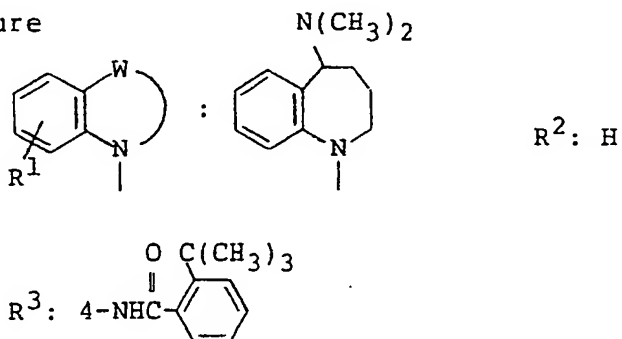
Recrystallization solvent: Ethanol

Melting Point: 219 - 220°C

Form: Free

Example 616

Structure



Crystalline form: White powder

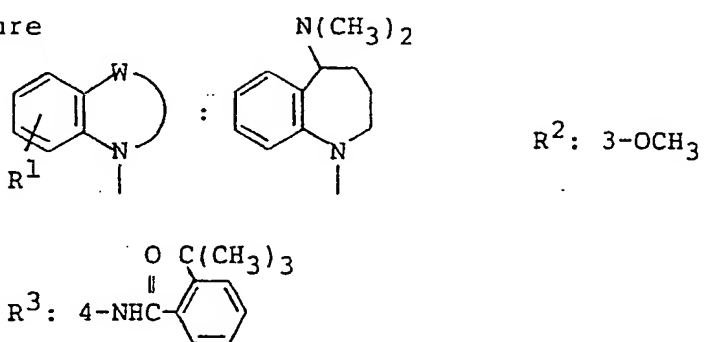
Recrystallization solvent: Ethanol

Melting Point: 226 - 228°C

Form: Free

Example 617

Structure



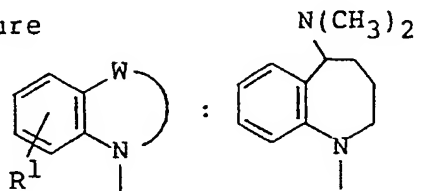
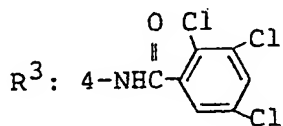
Crystalline form: Colorless amorphous

NMR analysis: 107)

Form: Free

Example 618

Structure

 $R^2: 3-OCH_3$ 

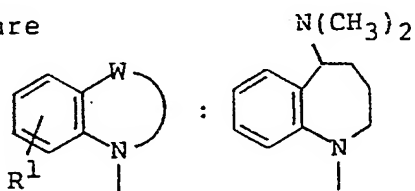
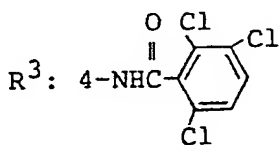
Crystalline form: Colorless amorphous

NMR analysis: 108)

Form: Free

Example 619

Structure

 $R^2: 3-OCH_3$ 

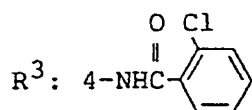
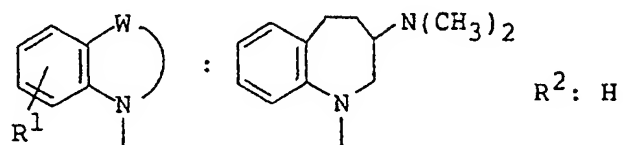
Crystalline form: Colorless amorphous

NMR analysis: 109)

Form: Free

Example 620

Structure



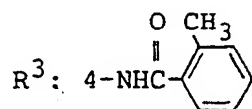
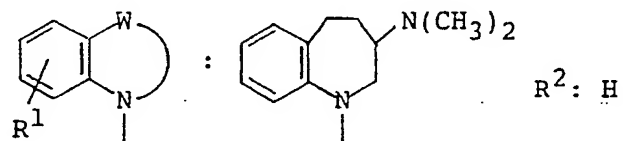
Crystalline form: Colorless amorphous

NMR analysis: 110)

Form: Free

Example 621

Structure



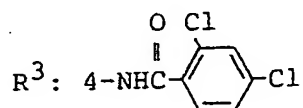
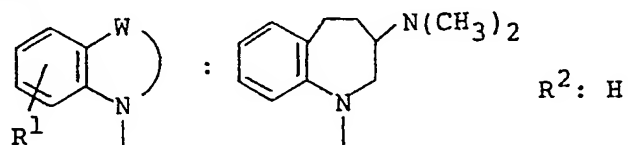
Crystalline form: Colorless amorphous

NMR analysis: 111)

Form: Free

Example 622

Structure



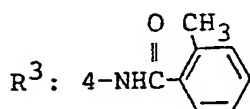
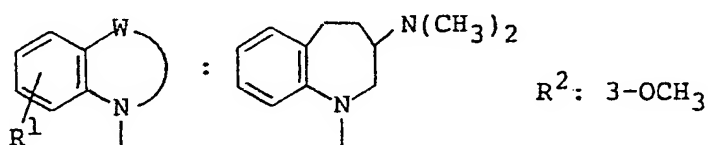
Crystalline form: Colorless amorphous

NMR analysis: 112)

Form: Free

Example 623

Structure



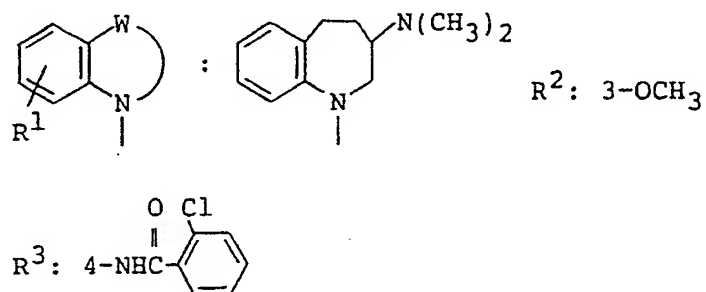
Crystalline form: Colorless amorphous

NMR analysis: 113)

Form: Free

Example 624

Structure



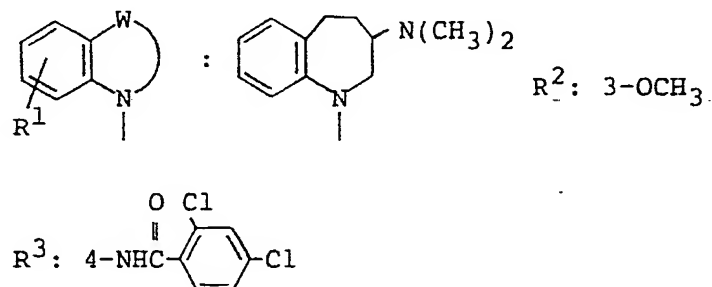
Crystalline form: Colorless amorphous

NMR analysis: 114)

Form: Free

Example 625

Structure



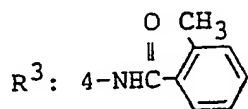
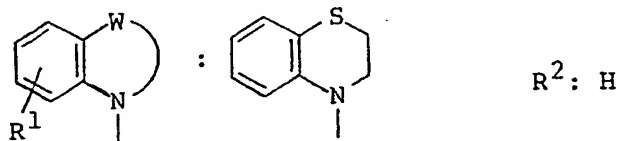
Crystalline form: Colorless amorphous

NMR analysis: 115)

Form: Free

Example 626

Structure



Crystalline form: White powder

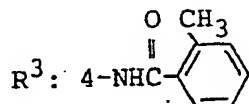
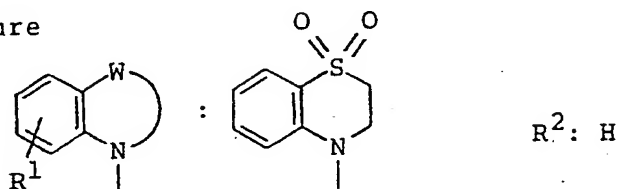
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 183 - 184°C

Form: Free

Example 627

Structure



Crystalline form: White powder

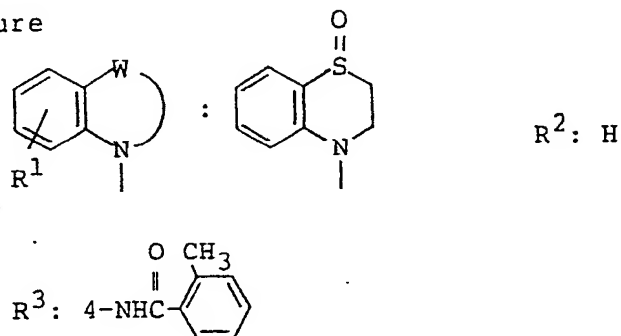
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 219 - 220°C

Form: Free

Example 628

Structure



Crystalline form: White powder

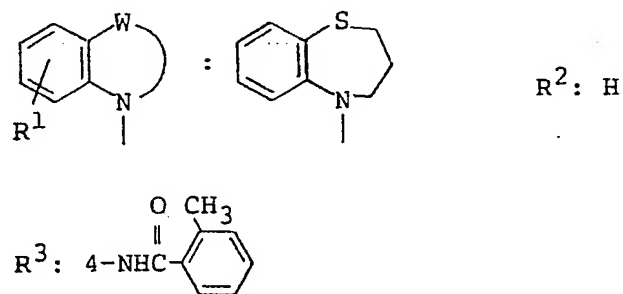
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 240 - 241°C

Form: Free

Example 629

Structure



Crystalline form: White powder

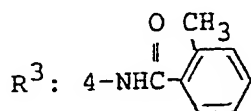
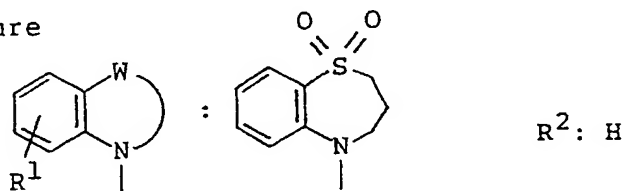
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 205 - 206°C

Form: Free

Example 630

Structure



Crystalline form: White powder

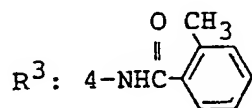
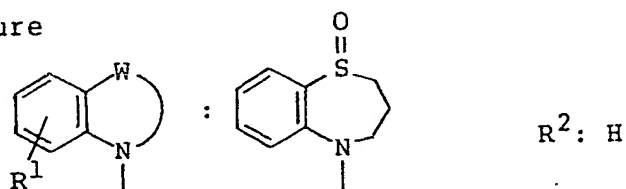
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 238 - 239°C

Form: Free

Example 631

Structure



Crystalline form: White powder

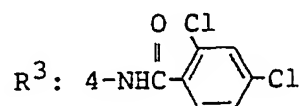
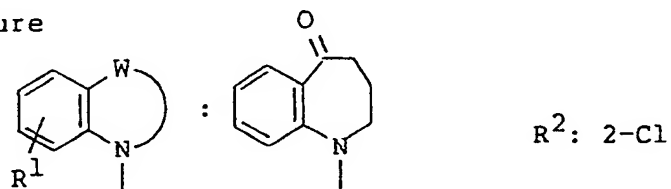
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 233 - 234°C

Form: Free

Example 632

Structure



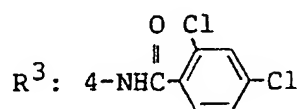
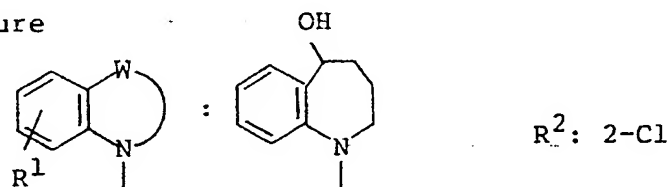
Crystalline form: Colorless amorphous

NMR analysis: 116)

Form: Free

Example 633

Structure



Crystalline form: White powder

Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 259.5 - 260.5°C

Form: Free

- 80) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.24-5.26 (18H, m), 6.39-7.59 (13H, m)
- 81) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.70-2.10 (m, 2H), 2.15-2.60 (m, 12H), 3.56 (t, $J=5.8$ Hz, 1H), 3.65-3.95 (m, 4H) 4.05-4.25 (m, 1H), 6.64 (d, $J=7.7$ Hz, 1H), 6.85-7.50 (m, 9H), 8.11 (brs, 1H), 8.42 (d, $J=8.8$ Hz, 1H)
- 82) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.00-2.90 (m, 3H), 2.49 (s, 3H), 3.70-3.90 (m, 1H), 4.00-4.20 (m, 1H), 4.80-5.00 (m, 1H), 6.89 (d, $J=6.3$ Hz, 1H), 6.95-7.65 (m, 11H), 7.70 (brs, 1H)
- 83) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.95-2.90 (m, 2H), 2.48 (s, 3H), 2.55 (s, 3H), 3.77 (t, $J=5.1$ Hz, 1H), 3.92 (t, $J=6.7$ Hz, 2H), 6.72 (d, $J=8.0$ Hz, 1H), 6.90-7.15 (m, 2H), 7.15-7.70 (m, 9H), 7.81 (brs, 1H)
- 84) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.11 (s, 3H), 2.20-2.40 (m, 2H), 2.50 (s, 3H), 3.80-4.10 (m, 1H), 4.12-4.25 (m, 1H), 6.03 (t, $J=4.3$ Hz, 1H), 6.80-7.65 (m, 12H), 7.80 (brs, 1H)
- 85) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.80-2.40 (m, 5H), 2.45 (s, 3H), 2.81 (s, 3H), 3.55-3.82 (m, 1H), 4.15-4.40 (m, 1H), 5.90-6.10 (m, 1H), 6.80-7.80 (m, 12H), 8.67 (brs, 1H)
- 86) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.95-2.35 (2H, m), 2.75-3.0 (2H, m), 3.0-5.4 (2H, m), 6.55-7.95 (11H, m), 8.09 (1H, s)

- 87) $^1\text{H-NMR}(\text{DMSO-}d_6)$ δ ; 1.85-2.2 (2H, m), 2.7-2.95 (2H, m), 3.5-5.0 (2H, m), 6.8-7.8 (12H, m), 10.60 (1H, s)
- 88) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 0.8-1.1 (3H, m), 1.2-2.35 (6H, m), 2.35-5.25 (6H, m), 6.63 (1H, d, $J=7.7$ Hz), 6.8-7.6 (9H, m), 7.67 (1H, d, $J=8.2$ Hz), 7.9-8.15 (1H, m)
- 89) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.7-2.9 (7H, m), 4.5-6.5 (3H, m), 6.55-6.75 (1H, m), 6.85-7.6 (12H, m)
- 90) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.65-3.1 (7H, m), 4.7-6.6 (3H, m), 6.6-6.8 (1H, m), 6.85-7.65 (12H, m)
- 91) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.8-2.4 (2H, m), 2.86 (2H, t, $J=6$ Hz), 3.1-5.15 (2H, m), 6.85-7.5 (8H, m), 7.5-7.85 (3H, m), 8.19 (1H, s)
- 92) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.46-2.28 (4H, m), 2.37 (3H, s), 2.58-2.90 (1H, m), 4.57-5.10 (2H, m), 6.59 (1H, d, $J=7.6$ Hz), 6.91-7.52 (11H, m), 7.62 (1H, d, $J=7.6$ Hz), 8.10-8.40 (1H, m)
- 93) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.45-1.91 (2H, m), 1.91-2.65 (2H, m), 2.65-2.90 (1H, m), 4.63-5.22 (2H, m), 6.63 (1H, d, $J=7.4$ Hz), 7.34-8.03 (11H, m), 10.16-10.44 (1H, m)
- 94) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.08-1.47 (3H, m), 1.50-1.97 (2H, m), 1.97-2.48 (2H, m), 2.65-3.02 (1H, m), 4.00-4.43 (4H, m), 4.52-5.15 (2H, m), 6.50-6.79 (1H, m), 6.90-7.70 (10H, m), 8.26-8.60 (1H, m)

- 95) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.56-2.67 (4H, m), 2.46 (3H, s),
2.67-3.03 (1H, m), 3.82-4.32 (2H, m), 4.45-5.15
(2H, m), 5.43-5.83 (1H, m), 6.20-6.45 (1H, m),
6.50-6.86 (2H, m), 6.86-7.70 (10H, m), 7.76-8.10
(1H, m)
- 96) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.52-1.90 (2H, m), 1.90-2.54 (2H,
m), 2.67-3.05 (1H, m), 3.74-4.32 (2H, m), 4.38-5.17
(2H, m), 5.52-5.98 (1H, brs), 6.20-6.48 (1H, brs),
6.55-6.84 (1H, m), 6.89-7.55 (9H, m), 7.55-7.77
(1H, m), 8.15-8.86 (1H, brs)
- 97) $^1\text{H-NMR}(\text{DMSO}-d_6)$ δ ; 1.26-2.49 (4H, m), 2.57-2.93
(1H, m), 4.07-4.43 (2H, m), 4.44-4.98 (2H, m),
6.62-6.87 (1H, m), 6.92-7.80 (11H, m), 10.57 (1H,
s), 12.74 (1H, s)
- 98) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.52-1.89 (2H, m), 1.89-2.56 (2H,
m), 2.65-3.02 (1H, m), 3.90-4.40 (2H, m), 4.40-5.07
(2H, m), 6.58-6.78 (1H, m), 6.90-7.70 (10H, m),
8.57-8.81 (1H, brs)
- 99) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.49-1.89 (2H, m), 1.89-2.60 (2H,
m), 2.63-3.23 (7H, m), 4.04-4.49 (2H, m), 4.52-5.21
(2H, m), 6.52-6.80 (1H, m), 6.89-7.84 (10H, m),
8.08-8.52 (1H, m)
- 100) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.41-1.86 (6H, m), 1.86-2.53 (4H,
m), 2.25 (3H, s), 2.29 (3H, s), 2.43 (3H, s), 2.60-
2.97 (1H, m), 3.36-3.77 (2H, m), 4.40-5.10 (2H, m),
6.54-6.72 (1H, m), 6.88-7.67 (11H, m), 8.27-8.58

- 108) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.2-3.0 (10H, m), 3.0-5.2 (6H, m), 6.5-7.7 (8H, m), 8.22 (1H, d, $J=8.4$ Hz), 8.36 (1H, s)
- 109) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.2-3.0 (10H, m), 3.0-5.2 (6H, m), 6.3-7.7 (10H, m)
- 110) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.5-1.7 (1H, m), 2.2-2.7 (2H, m), 2.40 (6H, s), 2.7-3.0 (3H, m), 5.1-5.3 (1H, m), 6.67 (1H, d, $J=7.7$ Hz), 6.9-7.5 (10H, m), 7.69 (1H, d, $J=6$ Hz), 8.06 (1H, s)
- 111) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.4-1.7 (1H, m), 2.1-2.7 (2H, m), 2.40 (6H, s), 2.44 (3H, s), 2.7-3.0 (3H, m), 5.1-5.3 (1H, m), 6.68 (1H, d, $J=7.8$ Hz), 6.9-7.5 (11H, m), 7.66 (1H, s)
- 112) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.5-1.8 (1H, m), 2.1-2.7 (2H, m), 2.38 (6H, s), 2.7-3.0 (3H, m), 5.1-5.3 (1H, m), 6.66 (1H, d, $J=7.7$ Hz), 6.9-7.0 (9H, m), 7.57 (1H, d, $J=8.3$ Hz), 8.42 (1H, s)
- 113) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.5-1.8 (1H, m), 2.1-2.7 (2H, m), 2.41 (6H, s), 2.48 (3H, s), 2.7-3.0 (3H, m), 3.68 (3H, s), 5.2-5.4 (1H, m), 6.6-6.8 (2H, m), 6.9-7.5 (8H, m), 8.09 (1H, s), 8.26 (1H, d, $J=8.1$ Hz)
- 114) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.5-1.7 (1H, m), 2.1-2.3 (1H, m), 2.41 (6H, s), 2.4-2.6 (1H, m), 2.8-3.0 (3H, m), 3.71 (3H, s), 5.2-5.4 (1H, m), 6.6-6.8 (2H, m), 6.9-7.5 (7H, m), 7.7-7.8 (1H, m), 8.27 (1H, d, $J=8.4$ Hz), 8.57 (1H, s)

- (1H, m)
- 101) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.44-1.85 (6H, m), 1.85-2.61 (4H, m), 2.32 (3H, s), 2.35 (3H, s), 2.61-3.00 (1H, m), 3.33-3.76 (2H, m), 4.40-5.20 (2H, m), 6.57-6.75 (1H, m), 6.90 - 7.70 (11H, m), 8.50-8.93 (1H, m)
- 102) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.49-2.04 (6H, m), 2.10-3.02 (5H, m), 2.47 (6H, s), 3.40-3.88 (2H, m), 4.30-5.17 (2H, m), 6.59-6.78 (1H, m), 6.93-7.76 (10H, m), 8.75-9.40 (1H, m)
- 103) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.47-2.47 (6H, m), 2.44 (3H, s), 2.62-3.03 (1H, m), 3.47-4.03 (4H, m), 4.48-5.17 (2H, m), 6.51-6.74 (1H, m), 6.87-7.62 (11H, m), 7.62-7.77 (2H, m), 7.77-8.03 (3H, m)
- 104) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.42-2.32 (6H, m), 2.44 (3H, s), 2.57-2.97 (1H, m), 3.12-3.83 (4H, m), 4.39-5.13 (2H, m), 6.50-6.71 (1H, m), 6.90-7.73 (12H, m)
- 105) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.50-2.63 (9H, m), 2.47 (3H, s), 2.66-3.07 (1H, m), 3.10-3.88 (4H, m), 4.40-5.17 (2H, m), 5.87-6.23 (1H, brs), 6.60-6.79 (1H, m), 6.94-7.60 (11H, m), 7.67 (1H, s)
- 106) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.20-2.53 (13H, m), 2.63-2.82, 3.00-3.13, 3.50-3.67, 4.05-4.23 (total 3H, m), 6.55 - 8.00 (13H, m)
- 107) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.41 (9H, s), 1.20-2.55 (10H, m), 3.42-4.20 (5.8H, m), 5.00-5.20 (0.2H, m), 6.60-7.67 (10H, m), 7.99 (1H, brs), 8.26 (1H, d, J=8.4 Hz)

- 115) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.5-1.7 (1H, m), 2.1-2.7 (2H, m), 2.41 (6H, s), 2.7-3.0 (3H, m), 3.71 (3H, s), 5.2-5.4 (1H, m), 6.6-7.6 (8H, m), 7.70 (1H, d, $J=8.3$ Hz), 8.24 (1H, d, $J=8.5$ Hz), 8.59 (1H, s)
- 116) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.8-2.3 (3H, m), 2.7-2.9 (2H, m), 3.5-3.7 (1H, m), 6.8-8.0 (10H, m), 8.7-9.1 (1H, br)

Example 634

To a mixture of 5-oxo-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (4 g) and pyridine (50 ml) is added hydroxylamine hydrochloride (1.84 g) and the mixture is refluxed for 2.5 hours. The reaction solution is concentrated and water is added to the resulting residue. The precipitated crystal is collected by filtration, and recrystallized from dioxane/water to give 5-hydroxyimino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2 g) as white powder, m.p. 272 - 273°C.

Example 635

5-Chloro-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.8 g) is dissolved in dimethylformamide and thereto is added sodium azide (0.18 g) at room temperature. The mixture is stirred at room temperature overnight, and further reacted with heating at 50°C for 5 hours. Water is added to the reaction mixture and the precipitated crystal is collected by filtration to give 5-azido-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-

tetrahydro-1H-benzazepine (0.68 g) as light brown powder.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.65-3.1 (8H, m), 4.7-6.6 (3H, m), 6.6-6.8 (1H, m), 6.85-7.65 (12H, m)

Example 636

5-Azido-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.63 g) is dissolved in ethanol and thereto is added 10 % Pd-C (0.1 g). The mixture is subjected to catalytic hydrogenation at room temperature under 1 atm. of hydrogen. Pd-C is removed by filtration and the filtrate is evaporated. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from diethyl ether to give 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.34 g) as white powder, m.p. 198.5 - 199.5°C.

Example 637

To 5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.58 g) are added acetic anhydride (8.0 ml) and pyridine (2.0 ml). The mixture is stirred at room temperature for 1 hour. Water is added to the reaction mixture and the precipitated crystal is collected by filtration, and recrystallized from ethyl acetate/n-hexane to give 5-acetyloxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.56 g) as white powder, m.p. 193 - 194°C.

Example 638

5-Ethoxycarbonylmethoxy-1-[4-(2-methylbenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.00 g) is dissolved in methanol (35 ml) and thereto are added aqueous ammonia (20 ml) and ammonium chloride (0.50 g). The mixture is heated at 100°C for 3.5 hours in a sealed tube. After cooling, the reaction solution is concentrated under reduced pressure and acidified with hydrochloric acid, and extracted with dichloromethane. The extract is dried over magnesium sulfate and the solvent is distilled off. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 15 : 1) to give 5-carbamoylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.68 g) as colorless amorphous.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.56-2.67 (4H, m), 2.46 (3H, s), 2.67-3.03 (1H, m), 3.82-4.32 (2H, m), 4.45-5.15 (2H, m), 5.43-5.83 (1H, m), 6.20-6.45 (1H, m), 6.50-6.86 (2H, m), 6.86-7.70 (10H, m), 7.76-8.10 (1H, m)

Using the suitable starting materials, the compounds of the above Examples 593 and 594 are obtained in the same manner as in Example 638.

Example 639

5-Ethoxycarbonylmethoxy-1-[4-(2,4-dichlorobenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.94 g) is dissolved in ethanol (100 ml) and thereto is added 5N aqueous sodium hydroxide solution (0.50 ml). The mixture is

stirred at room temperature for 2 hours. The reaction solution is concentrated under reduced pressure and to the resulting residue is added diluted hydrochloric acid and then extracted with dichloromethane. The extract is dried over magnesium sulfate and the solvent is distilled off. The resulting residue is washed with n-hexane and collected by filtration to give 5-carboxymethoxy-1-[4-(2,4-dichloro-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.79 g) as colorless amorphous.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.52-1.89 (2H, m), 1.89-2.56 (2H, m), 2.65-3.02 (1H, m), 3.90-4.40 (2H, m), 4.40-5.07 (2H, m), 6.58-6.78 (1H, m), 6.90-7.70 (10H, m), 8.57-8.81 (1H, brs)

Using the suitable starting materials, the compounds of the above Examples 595 and 596 are obtained in the same manner as in Example 639.

Example 640

5-Carboxymethoxy-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.55 g) is dissolved in dimethylformamide (20 ml) and thereto are added dimethylamine hydrochloride (0.20 g) and diethyl chlorophosphate (0.33 g). To the mixture is added triethylamine (1.0 ml) under ice-cooling, and the mixture is stirred under ice-cooling for 30 minutes, and at room temperature for more 2 hours. Water is added to the reaction solution and the precipitated crystal is collected by filtration and recrystallized from ethyl acetate/n-hexane to give 5-

dimethylaminocarbonylmethoxy-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.50 g) as colorless prisms, m.p. 203 - 204°C.

Using the suitable starting materials, the compounds of the above Examples 599 and 600 are obtained in the same manner as in Example 640.

Example 641

5-[3-(Phthalimid-1-yl)propoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.26 g) is dissolved in ethanol (100 ml) and thereto is added hydrazine hydrate (1.0 ml). The mixture is refluxed with stirring for 1 hour. The reaction solution is evaporated under reduced pressure and to the resulting residue is added dichloromethane. The insoluble materials are removed by filtration. The filtrate is purified by silica gel column chromatography (eluent; dichloromethane : methanol : aqueous ammonia = 70 : 10 : 1) to give 5-(3-aminopropoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g) as colorless amorphous.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.42-2.32 (6H, m), 2.44 (3H, s), 2.57-2.97 (1H, m), 3.12-3.83 (4H, m), 4.39-5.13 (2H, m), 6.50-6.71 (1H, m), 6.90-7.73 (12H, m)

Example 642

A solution of 5-dimethylamino-1-[3-methoxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-

benzazepine (0.50 g) in dichloromethane (30 ml) is added dropwise to a solution of 1M boron tribromide in dichloromethane (5.46 ml) at -45°C. After completion of the dropping, the mixture is stirred for 1 day while the temperature of the reaction mixture is gradually raised to room temperature. To the reaction solution is added water and the mixture is neutralized with sodium hydrogen carbonate, and extracted with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; chloroform : methanol = 500 : 1), and recrystallized from methanol/diethyl ether to give 5-dimethylamino-1-[3-hydroxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.33 g) as white powder, m.p. 201.5 - 202.5°C.

Using the suitable starting materials, the compounds of the above Examples 10, 32, 343, 356, 535, 555 and 556 are obtained in the same manner as in Example 642.

Example 643

To a solution of 4-[4-(2-methylbenzoylamino)-benzoyl]-3,4-dihydro-2H-1,4-benzazepine (0.5 g) in dichloromethane (10 ml) is added m-chloroperbenzoic acid (0.58 g) under ice-cooling, and the mixture is stirred at room temperature for 6 hours. The above reaction solution is poured into an aqueous solution of sodium carbonate (0.6 g) in water (10 ml) and the mixture is extracted with dichloro-

methane. The extract is washed with water, and dried over magnesium sulfate. The solvent is distilled off under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 100 : 1), and recrystallized from diethyl ether/dichloromethane to give 4-[4-(2-methylbenzoylamino)-benzoyl]-3,4-dihydro-2H-1,4-benzothiazine-1,1-dioxide (0.49 g) as white powder, m.p. 219 - 220°C.

Using the suitable starting materials, the compound of the above Example 630 is obtained in the same manner as in Example 643.

Example 644

To a suspension of 4-[4-(2-methylbenzoylamino)-benzoyl]-3,4-dihydro-2H-1,4-benzothiazine (0.5 g) in methanol (15 ml) is added an aqueous solution of sodium metaperiodate (0.28 g) in water (2.5 ml) and the mixture is stirred at room temperature for 72 hours. Water is added to the reaction solution and extracted with dichloromethane. The extract is dried over magnesium sulfate and the solvent is distilled off under reduced pressure. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 100 : 1), and recrystallized from dichloromethane/diethyl ether to give 4-[4-(2-methylbenzoylamino)benzoyl]-3,4-dihydro-2H-1,4-benzothiazin-1-oxide (0.34 g) as white powder, m.p. 240 - 241°C.

Using the suitable starting materials, the compound of the above Example 631 is obtained in the same manner as in Example 644.

Example 645

5-Hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (3.57 g) is dissolved in dichloromethane (30 ml) and pyridine (1.1 ml), and thereto is added dropwise methanesulfonyl chloride (0.9 ml) in small portions at 0°C. Then, the mixture is stirred at room temperature for 3 days. The solvent is distilled off and the resulting residue is poured into ice-water. The precipitated crystal is collected by filtration, washed with water, and dried to give 5-chloro-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (3.10 g) as light yellow powder.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.7-2.9 (8H, m), 4.5-6.5 (3H, m), 6.55-6.75 (1H, m), 6.85-7.6 (12H, m)

Example 646

5-Hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2.69 g) is dissolved in dimethylformamide (30 ml) and thereto are added 60 % sodium hydride dispersion in mineral oil (0.44 g) and ethyl bromoacetate (1.00 ml) under ice-cooling, and the mixture is stirred at room temperature for 4 hours. The reaction solution is poured into an aqueous ammonium chloride solution under ice-cooling, and extracted with ethyl

acetate. The extract is dried over magnesium sulfate and the solvent is distilled off. The resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 1 : 2), and recrystallized from ethyl acetate/n-hexane to give 5-ethoxycarbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl-2,3,4,5-tetrahydro-1H-benzazepine (2.10 g) as white powder, m.p. 178 - 181°C.

Using the suitable starting materials, the compounds of the above Examples 585 - 588 and 590 - 606 are obtained in the same manner as in Example 646.

Example 647

Using the suitable starting materials, the compounds of the above Examples 546 and 578 - 581 are obtained in the same manner as in Example 384.

Example 648

Using the suitable starting materials, the compounds of the above Examples 537 - 545, 547, 549 - 556, 561 - 564, 566, 568 - 571, 577, 601 - 603 and 607 - 625 are obtained in the same manner as in Example 388.

Example 649

Using the suitable starting materials, the compounds of the above Examples 549, 568 - 571, 575 and 606 are obtained in the same manner as in Example 389.

Example 650

Using the suitable starting materials, the compounds of the above Examples 537 - 545, 547, 549 - 556,

561 - 566, 568 - 571, 575, 577, 607, 608 and 613 - 625 are obtained in the same manner as in Example 390.

Example 651

Using the suitable starting materials, the compounds of the above Examples 601 - 603, 605 and 606 are obtained in the same manner as in Example 397.

Example 652

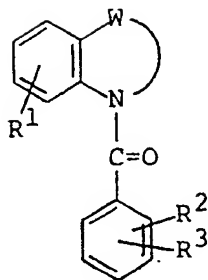
Using the suitable starting materials, the compound of the above Example 604 is obtained in the same manner as in Example 398.

Example 653

Using the suitable starting materials, the following compound is obtained in the same manner as in Examples 1, 382, 388 and 390.

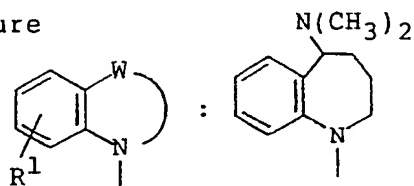
5-Methylamino-1-[2-chloro-4-(2-methylbenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 184.5 - 185.5°C (recrystallized from ethanol)

Using the suitable starting materials, the compounds of the following Table 4 are obtained in the same manner as in Examples 1 and 382.

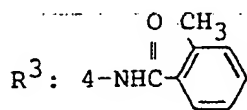
Table 4

Example 654

Structure



R²: 2-OH



Crystalline form: White powder

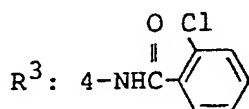
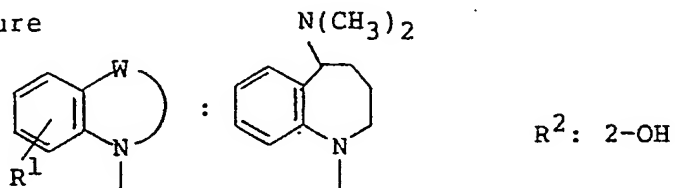
Recrystallization solvent: Methanol/n-hexane

Melting Point: 193.5 - 196°C

Form: Free

Example 655

Structure



Crystalline form: White powder

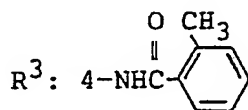
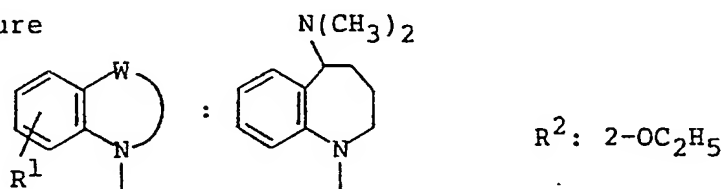
Recrystallization solvent: Methanol/n-hexane

Melting Point: 195 - 198°C

Form: Free

Example 656

Structure



Crystalline form: White powder

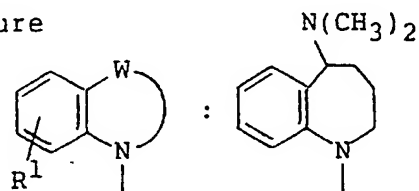
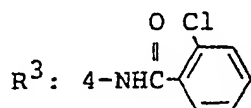
Recrystallization solvent: Methanol

Melting Point: 230.5 - 231.5°C

Form: Free

Example 657

Structure

 $R^2: 2\text{-OC}_2\text{H}_5$ 

Crystalline form: White powder

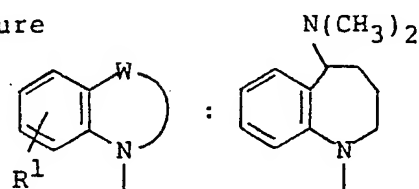
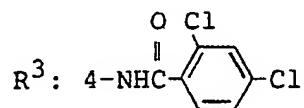
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 223 - 224.5°C

Form: Free

Example 658

Structure

 $R^2: 2\text{-OC}_2\text{H}_5$ 

Crystalline form: White powder

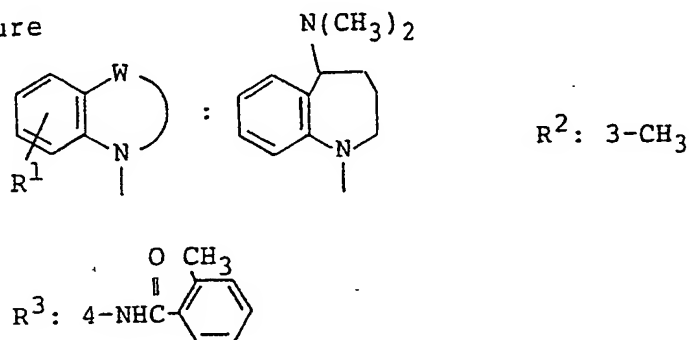
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 173 - 174°C

Form: Free

Example 659

Structure



Crystalline form: White powder

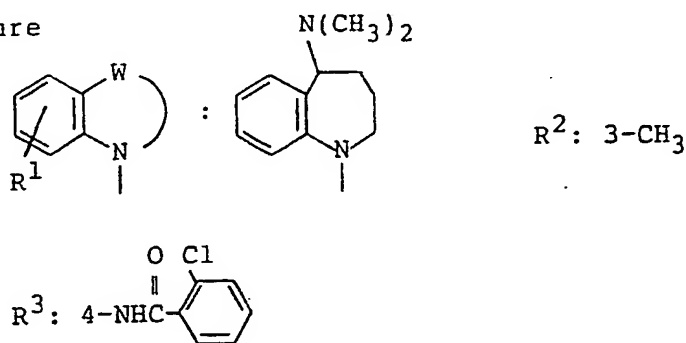
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 174 - 175°C

Form: Free

Example 660

Structure



Crystalline form: White powder

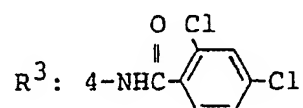
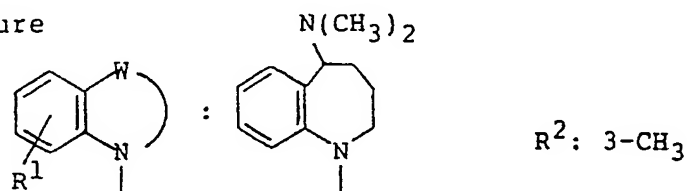
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 198 - 200°C

Form: Free

Example 661

Structure



Crystalline form: White powder

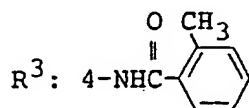
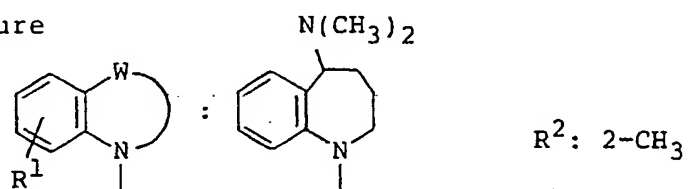
Recrystallization solvent: Methanol/n-hexane

Melting Point: 149 - 150.5°C

Form: Free

Example 662

Structure



Crystalline form: White powder

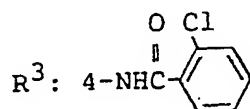
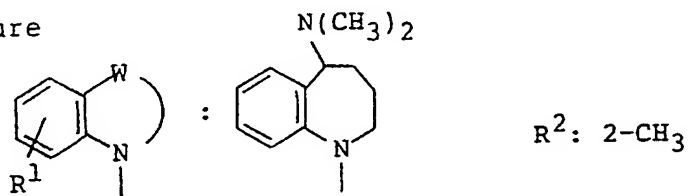
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 183 - 185°C

Form: Free

Example 663

Structure



Crystalline form: White powder

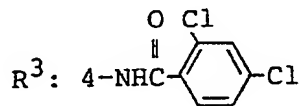
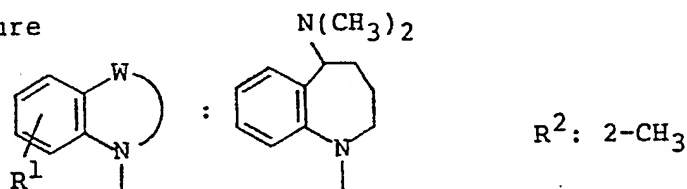
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 203 - 207°C

Form: Free

Example 664

Structure



Crystalline form: White powder

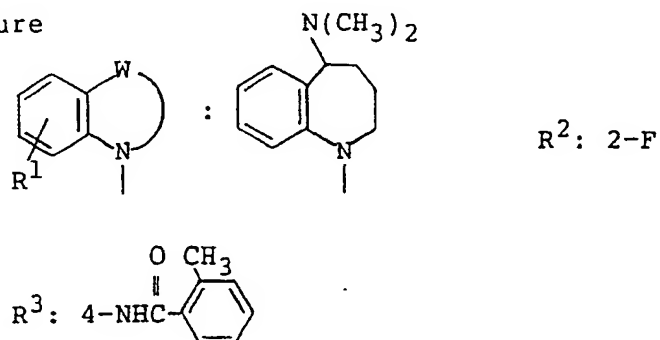
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 221 - 222°C

Form: Free

Example 665

Structure



Crystalline form: White powder

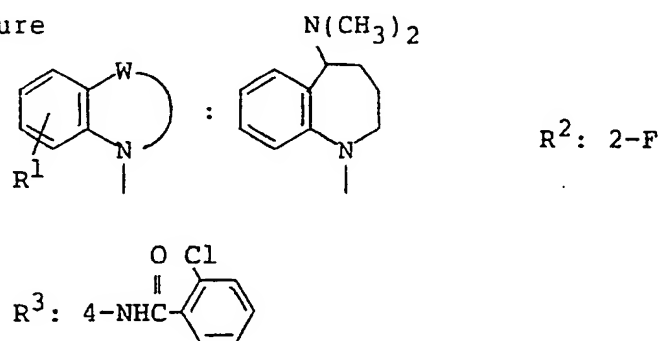
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 189 - 191°C

Form: Free

Example 666

Structure



Crystalline form: White powder

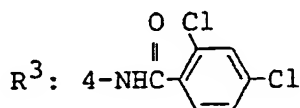
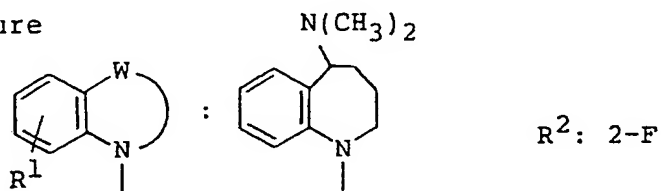
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 215.5 - 217°C

Form: Free

Example 667

Structure



Crystalline form: White powder

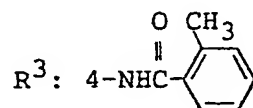
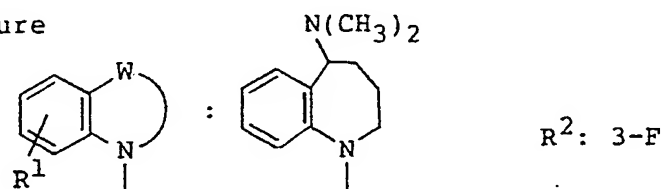
Recrystallization solvent: Methanol/n-hexane

Melting Point: 192 - 194°C

Form: Free

Example 668

Structure



Crystalline form: White powder

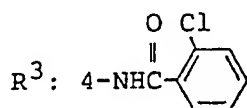
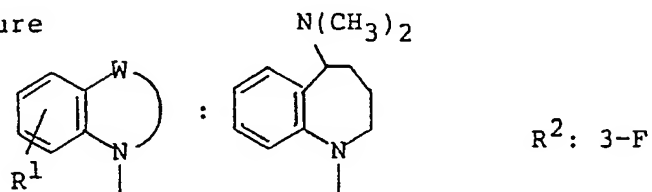
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 195 - 196°C

Form: Free

Example 669

Structure



Crystalline form: White powder

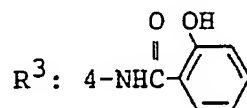
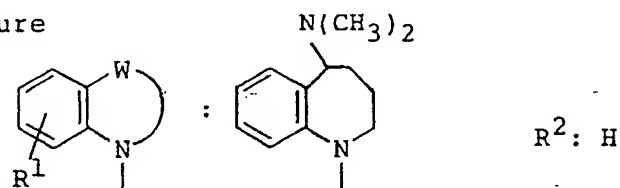
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 202 - 204.5°C

Form: Free

Example 670

Structure



Crystalline form: White powder

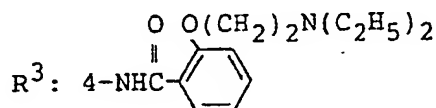
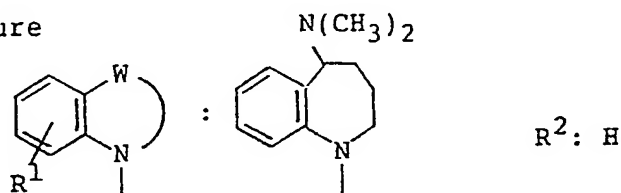
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 183 - 187°C

Form: Free

Example 671

Structure



Crystalline form: White powder

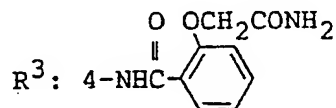
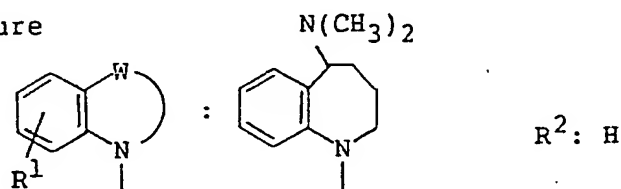
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 120 - 122°C

Form: Free

Example 672

Structure



Crystalline form: White powder

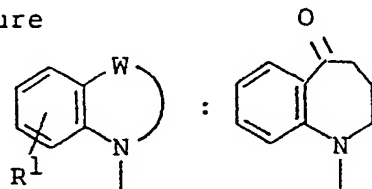
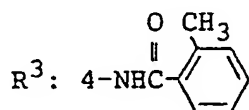
Recrystallization solvent: Chloroform/diethyl ether

Melting Point: 208 - 210°C

Form: Free

Example 673

Structure

 $R^2: 2\text{-OCH}_3$ 

Crystalline form: White powder

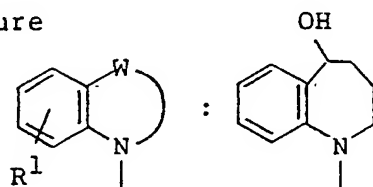
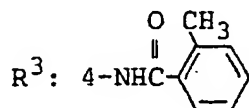
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 182 - 183°C

Form: Free

Example 674

Structure

 $R^2: 2\text{-OCH}_3$ 

Crystalline form: White powder

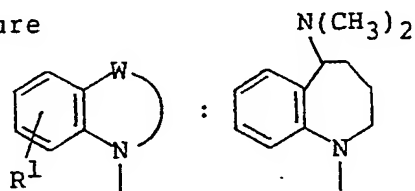
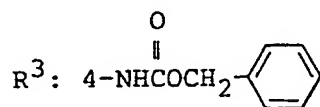
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 257 - 259°C

Form: Free

Example 675

Structure

 $R^2: 2\text{-OC}_2\text{H}_5$ 

Crystalline form: White powder

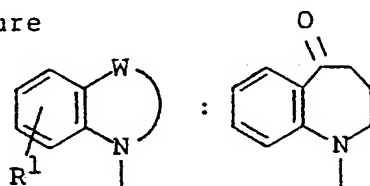
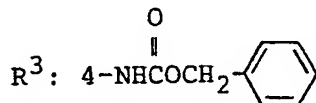
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 134 - 135°C

Form: Free

Example 676

Structure

 $R^2: 2\text{-OCH}_3$ 

Crystalline form: White powder

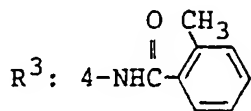
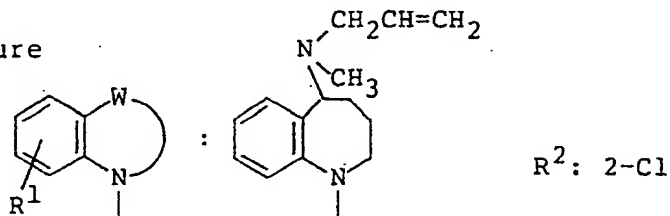
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 167 - 169°C

Form: Free

Example 677

Structure



Crystalline form: Light brown prisms

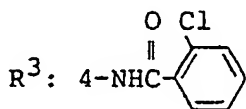
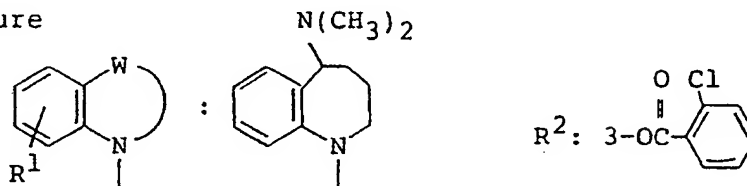
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 170 - 172°C

Form: Free

Example 678

Structure



Crystalline form: White powder

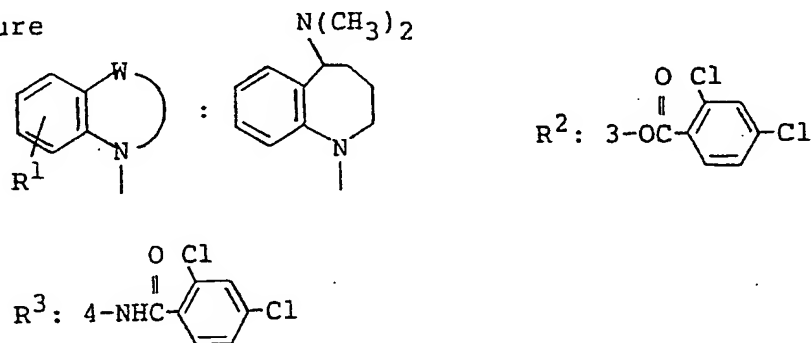
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 181.5 - 182.5°C

Form: Free

Example 679

Structure



Crystalline form: White powder

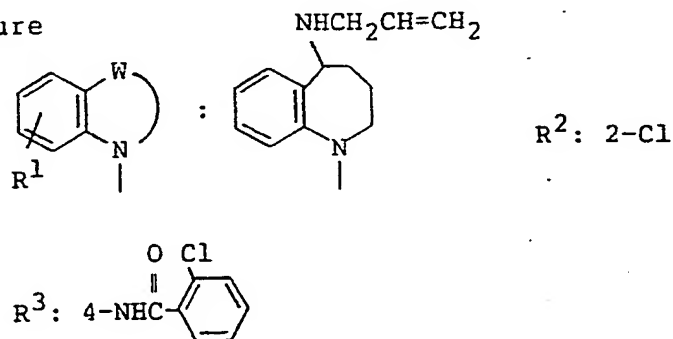
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 176.5 - 177°C

Form: Free

Example 680

Structure



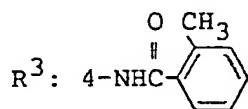
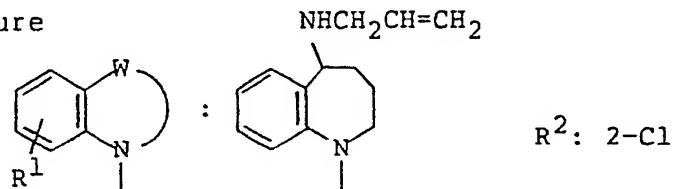
Crystalline form: Yellow amorphous

NMR analysis: 117)

Form: Free

Example 681

Structure



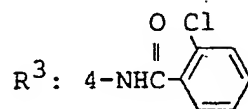
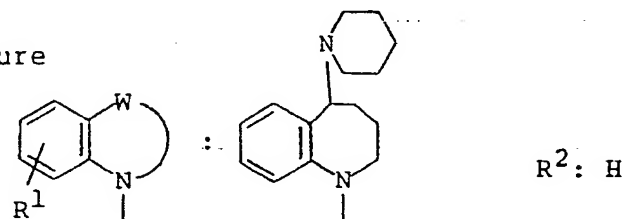
Crystalline form: Yellow amorphous

NMR analysis: 118)

Form: Free

Example 682

Structure



Crystalline form: White powder

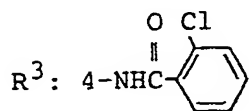
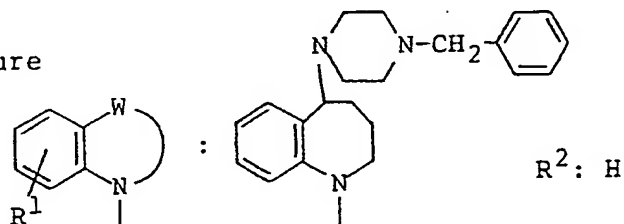
Recrystallization solvent: Ethanol

Melting Point: 236 - 239°C

Form: Free

Example 683

Structure



Crystalline form: White powder

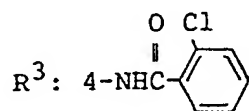
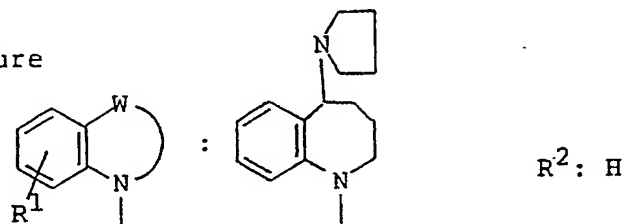
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 153 - 154°C

Form: Free

Example 684

Structure



Crystalline form: White powder

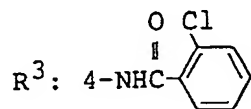
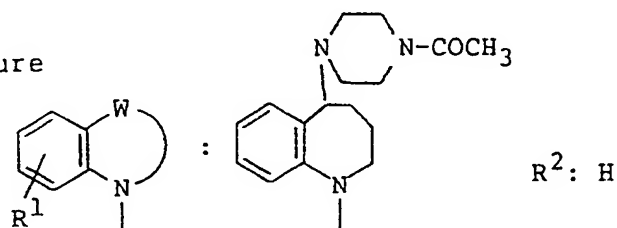
Recrystallization solvent: Ethyl acetate

Melting Point: 128 - 130°C

Form: Free

Example 685

Structure



Crystalline form: White powder

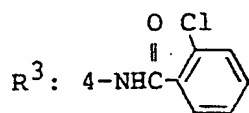
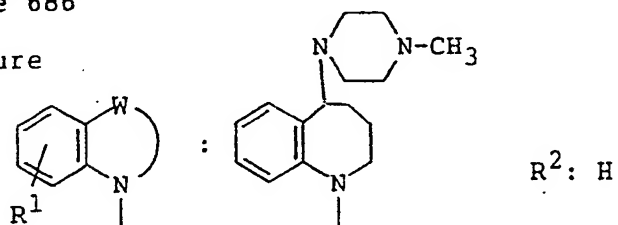
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 231 - 234°C

Form: Free

Example 686

Structure



Crystalline form: White powder

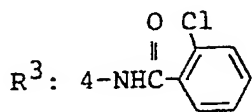
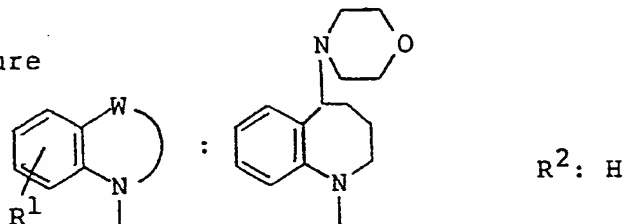
Recrystallization solvent: Ethyl acetate

Melting Point: 246 - 248°C

Form: Free

Example 687

Structure



Crystalline form: White powder

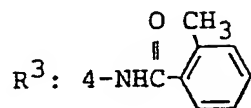
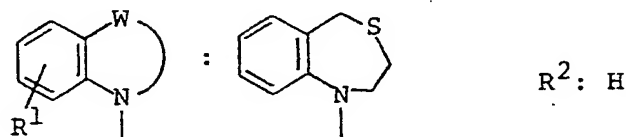
Recrystallization solvent: Ethanol/water

Melting Point: 248 - 248.5°C

Form: Free

Example 688

Structure



Crystalline form: White powder

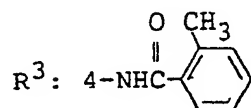
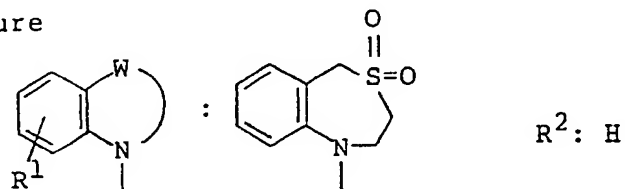
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 204 - 205°C

Form: Free

Example 689

Structure



Crystalline form: White powder

Recrystallization solvent: Dichloromethane/diethyl ether

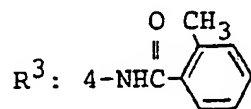
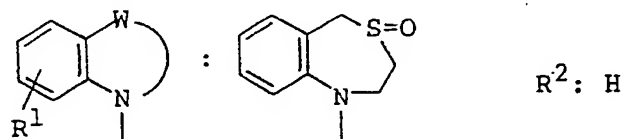
Melting Point: $>300^\circ\text{C}$

NMR analysis: 119)

Form: Free

Example 690

Structure



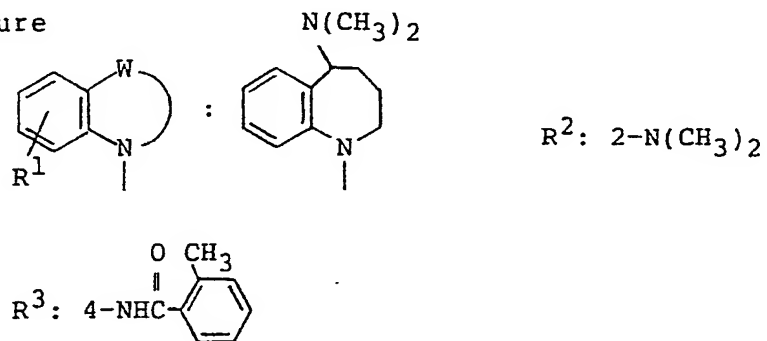
Crystalline form: White powder

Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: $292 - 294^\circ\text{C}$ Form: Free

Example 691

Structure



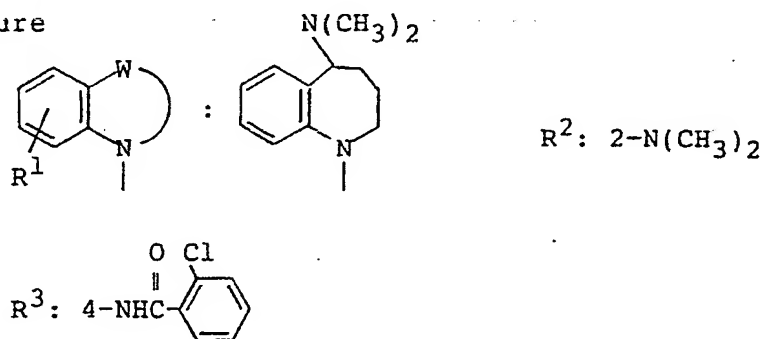
Crystalline form: Colorless amorphous

NMR analysis: 120)

Form: Free

Example 692

Structure



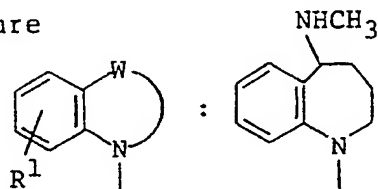
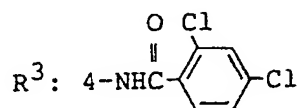
Crystalline form: Colorless amorphous

NMR analysis: 121)

Form: Free

Example 693

Structure

 R^2 : 2-Cl

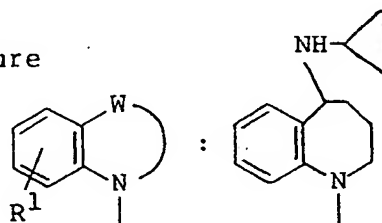
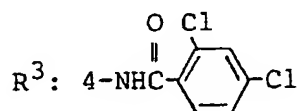
Crystalline form: Colorless amorphous

NMR analysis: 122)

Form: Free

Example 694

Structure

 R^2 : 2-Cl

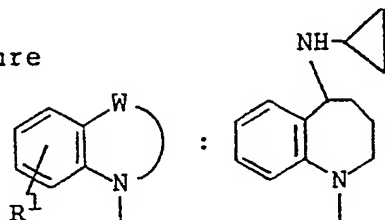
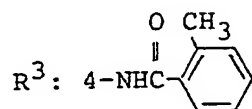
Crystalline form: Colorless amorphous

NMR analysis: 123)

Form: Free

Example 695

Structure

 R^2 : 2-Cl

Crystalline form: White powder

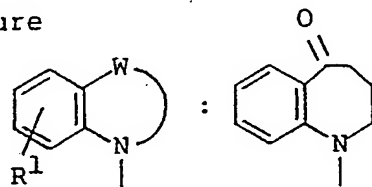
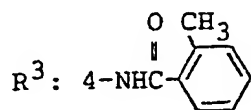
Recrystallization solvent: Ethanol

Melting Point: 198.5 - 199°C

Form: Free

Example 696

Structure

 R^2 : 2-Cl

Crystalline form: White powder

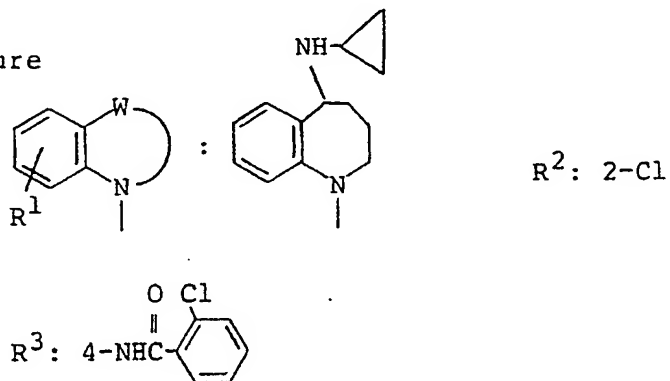
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 168 - 170°C

Form: Free

Example 697

Structure



Crystalline form: White powder

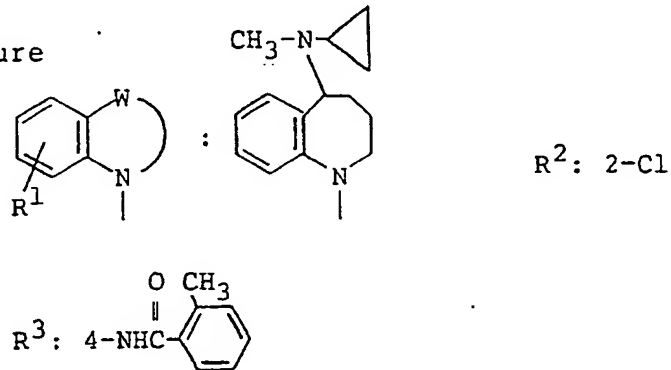
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 175 - 176°C

Form: Free

Example 698

Structure



Crystalline form: White powder

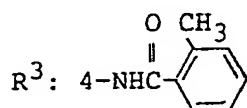
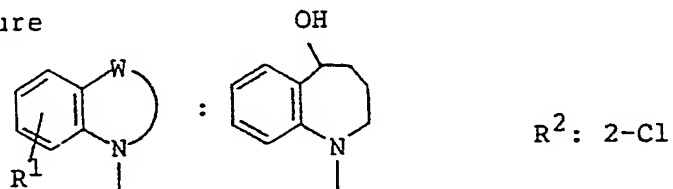
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 177 - 178°C

Form: Free

Example 699

Structure



Crystalline form: White powder

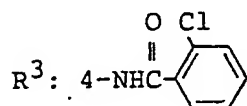
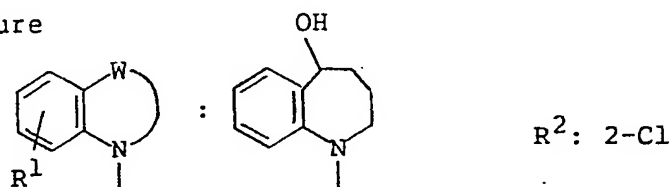
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 222 - 223.5°C

Form: Free

Example 700

Structure



Crystalline form: White powder

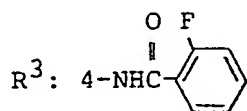
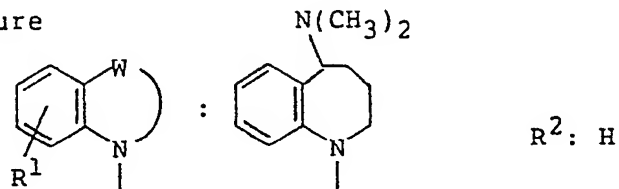
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 243 - 244°C

Form: Free

Example 701

Structure



Crystalline form: White powder

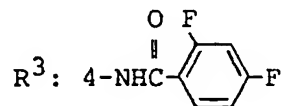
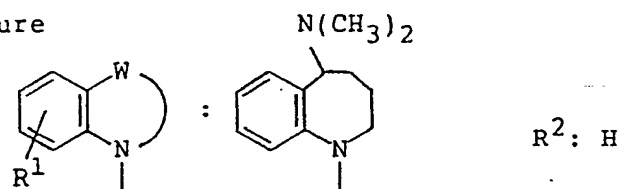
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 180 - 181°C

Form: Free

Example 702

Structure



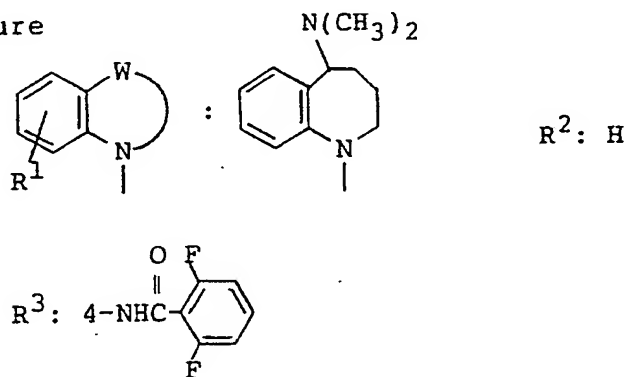
Crystalline form: Colorless amorphous

NMR analysis: 124)

Form: Free

Example 703

Structure



Crystalline form: White powder

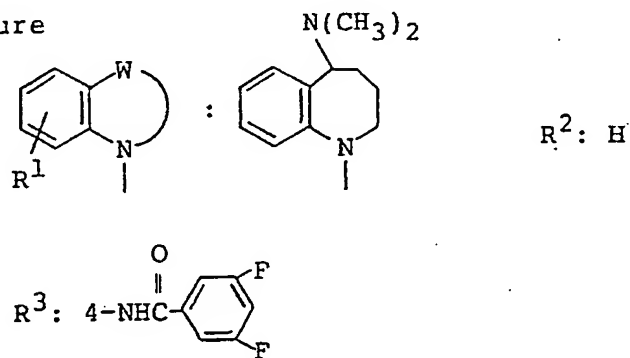
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 231 - 233°C

Form: Free

Example 704

Structure



Crystalline form: White powder.

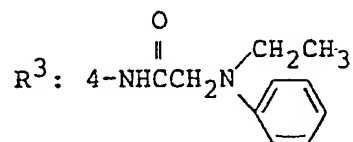
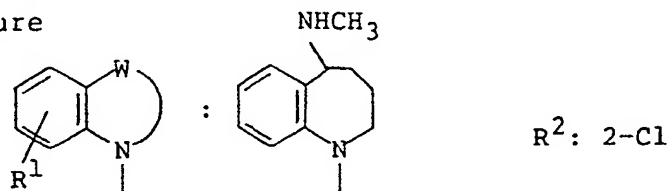
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 196 - 198°C

Form: Free

Example 705

Structure



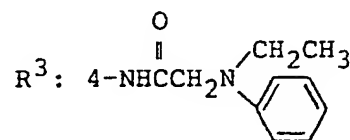
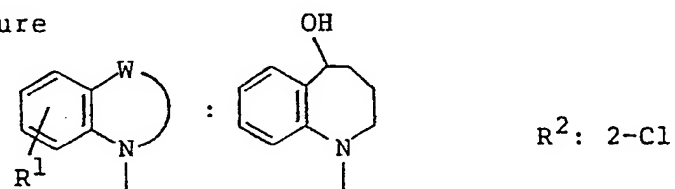
Crystalline form: Colorless amorphous

NMR analysis: 125)

Form: Free

Example 706

Structure



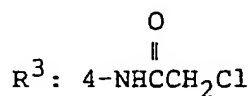
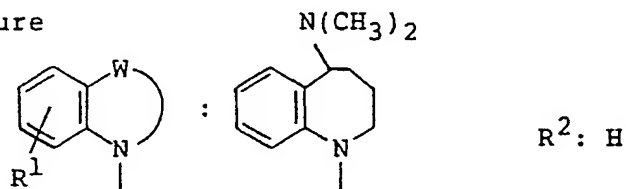
Crystalline form: Yellow amorphous

NMR analysis: 126)

Form: Free

Example 707

Structure



Crystalline form: Yellow powder

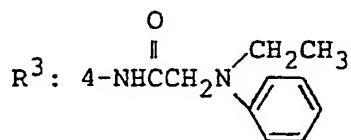
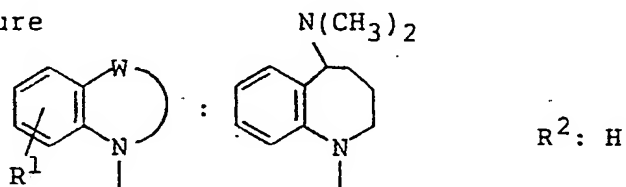
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 146 - 147°C

Form: Free

Example 708

Structure



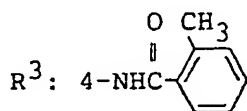
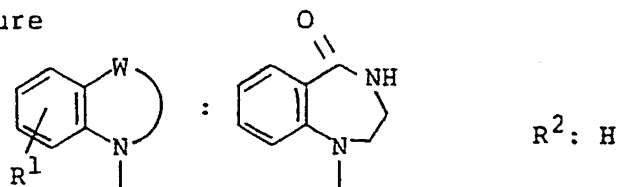
Crystalline form: Colorless amorphous

NMR analysis: 127)

Form: Free

Example 709

Structure



Crystalline form: White powder

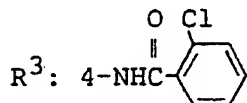
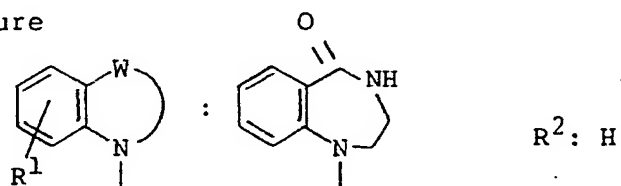
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 220 - 221°C

Form: Free

Example 710

Structure



Crystalline form: White powder

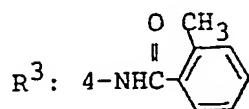
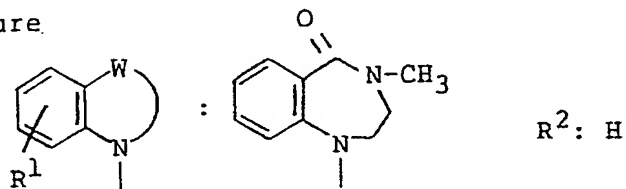
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 170 - 172°C

Form: Free

Example 711

Structure



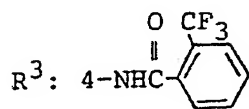
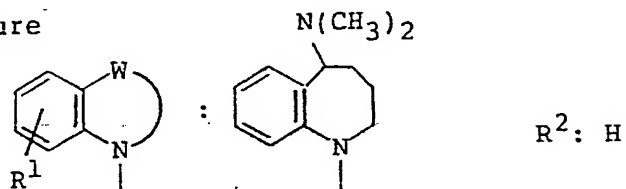
Crystalline form: Colorless amorphous

NMR analysis: 128}

Form: Free

Example 712

Structure



Crystalline form: White powder

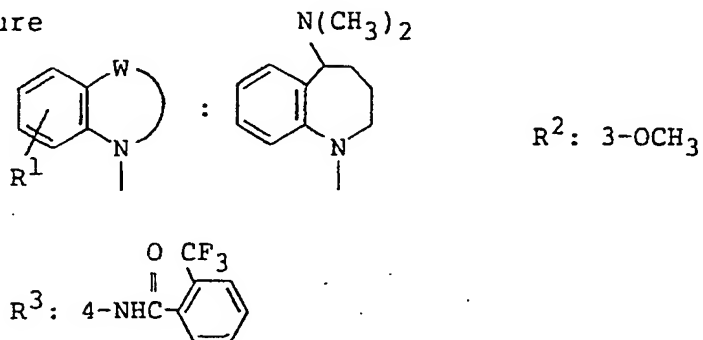
Recrystallization solvent: Ethanol

Melting Point: 224 - 225°C

Form: Free

Example 713

Structure



Crystalline form: White powder

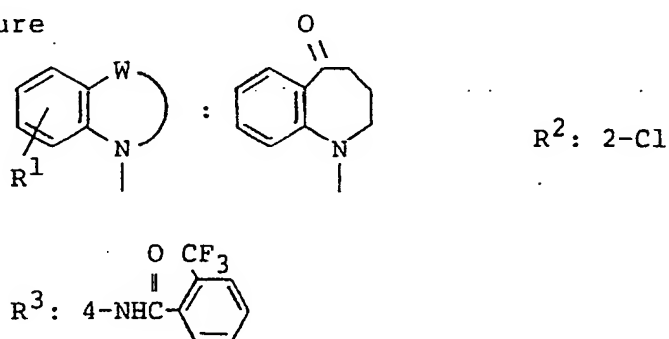
Recrystallization solvent: Ethanol

Melting Point: 193 - 196°C

Form: Free

Example 714

Structure



Crystalline form: White powder

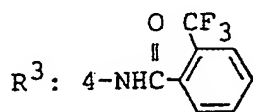
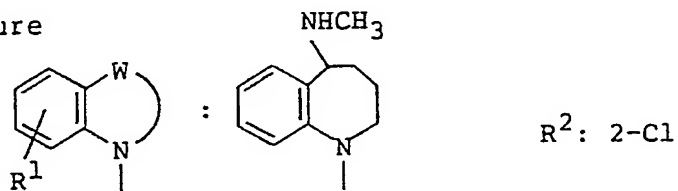
Recrystallization solvent: Ethanol

Melting Point: 212 - 214°C

Form: Free

Example 715

Structure



Crystalline form: White powder

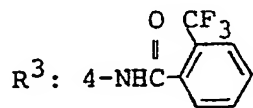
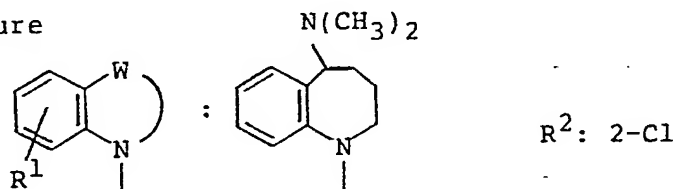
Recrystallization solvent: Ethanol

Melting Point: 211 - 213°C

Form: Free

Example 716

Structure



Crystalline form: White powder

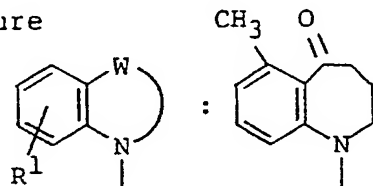
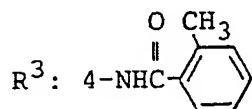
Recrystallization solvent: Ethanol

Melting Point: 213 - 215°C

Form: Free

Example 717

Structure

 R^2 : 2-Cl

Crystalline form: White powder

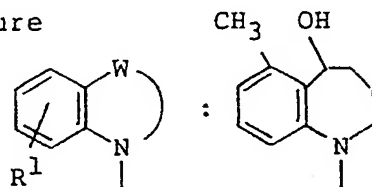
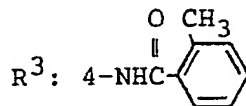
Recrystallization solvent: Ethanol

Melting Point: 199 - 201°C

Form: Free

Example 718

Structure

 R^2 : 2-Cl

Crystalline form: White powder

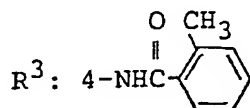
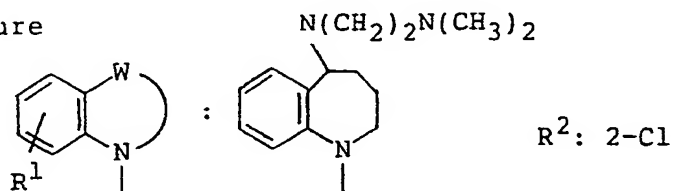
Recrystallization solvent: Ethanol

Melting Point: 238 - 240°C

Form: Free

Example 719

Structure



Crystalline form: White powder

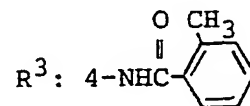
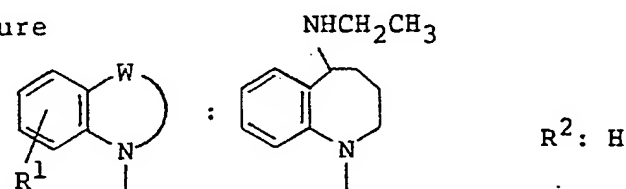
Recrystallization solvent: Ethanol

Melting Point: 188 - 189°C

Form: Free

Example 720

Structure



Crystalline form: Colorless prisms

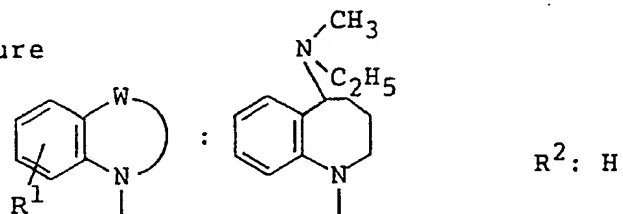
Recrystallization solvent: Dioxane/water

Melting Point: 135.5 - 137°C

Form: Free

Example 721

Structure



Crystalline form: White powder

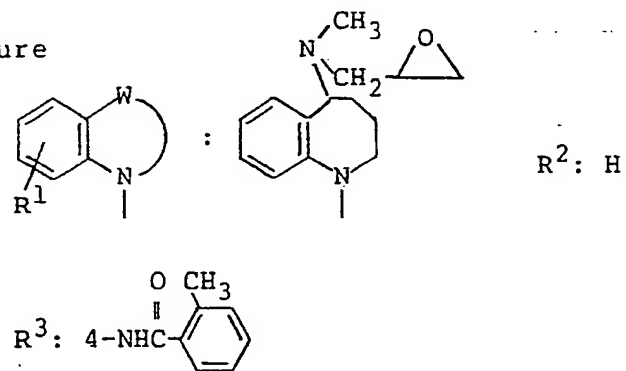
Recrystallization solvent: Isopropyl alcohol/
petroleum ether

Melting Point: 192 - 193°C

Form: Free

Example 722

Structure



Crystalline form: Colorless needles

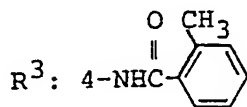
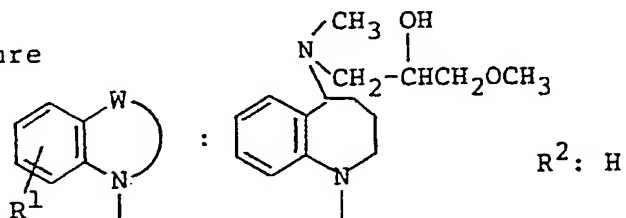
Recrystallization solvent: Ethyl acetate

Melting Point: 239 - 240°C

Form: Free

Example 723

Structure



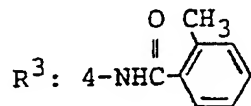
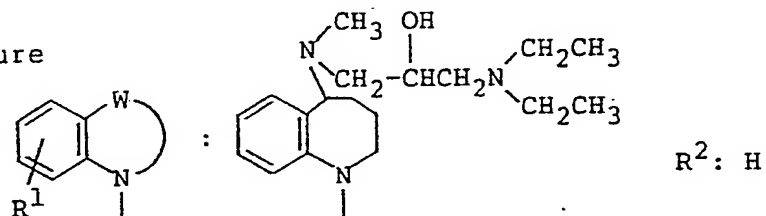
Crystalline form: Colorless amorphous

NMR analysis: 129)

Form: Free

Example 724

Structure



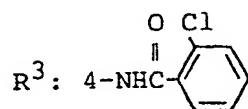
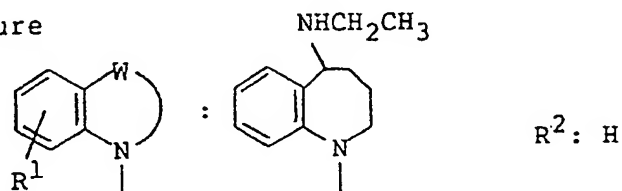
Crystalline form: Colorless amorphous

NMR analysis: 130)

Form: Free

Example 725

Structure



Crystalline form: Colorless needles

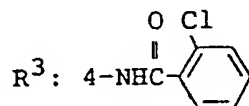
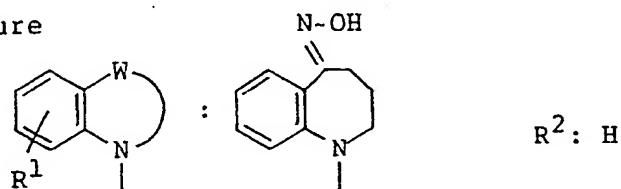
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 193 - 194°C

Form: Free

Example 726

Structure



Crystalline form: Light yellow prisms

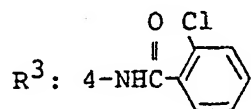
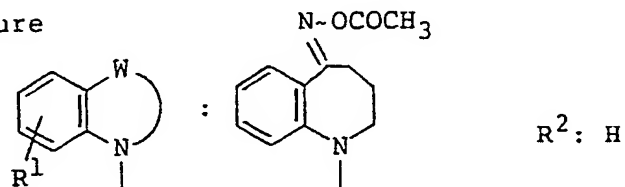
Recrystallization solvent: Ethanol

Melting Point: 245.5 - 247°C

Form: Free

Example 727

Structure



Crystalline form: Colorless prisms

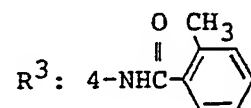
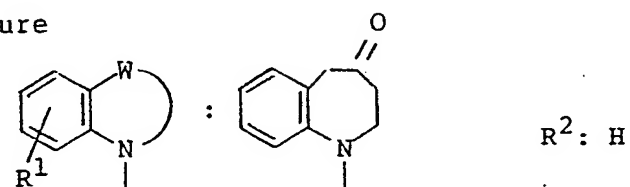
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 142 - 144°C

Form: Free

Example 728

Structure



Crystalline form: Light yellow prisms

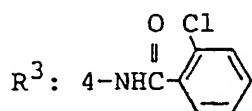
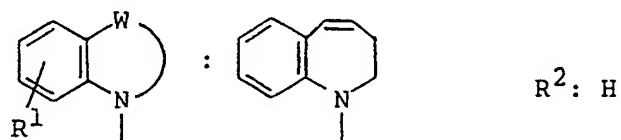
Recrystallization solvent: Ethanol

Melting Point: 214 - 217°C

Form: Free

Example 729

Structure



Crystalline form: Colorless needles

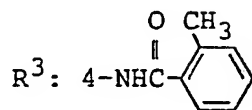
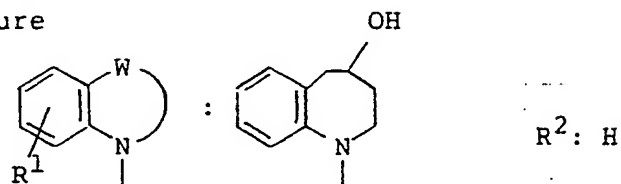
Recrystallization solvent: Ethanol

Melting Point: 205 - 207°C

Form: Free

Example 730

Structure

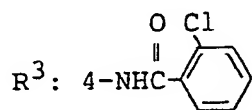
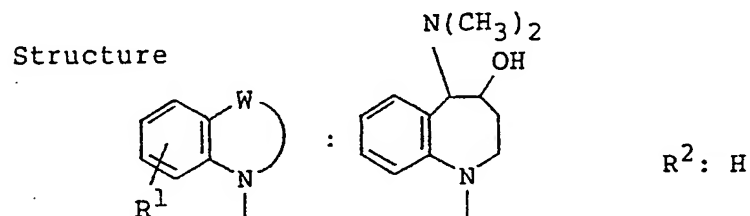


Crystalline form: Colorless needles

Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 201 - 203°C

Form: Free

Example 731

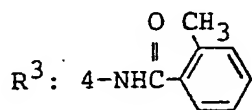
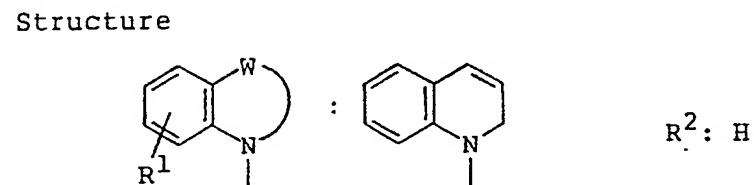
Crystalline form: Colorless needles

Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 180 - 182°C

Form: Free

Example 732



Crystalline form: Light yellow scales

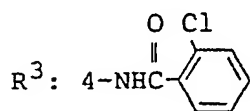
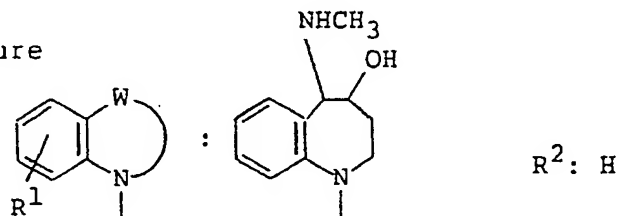
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 178 - 180°C

Form: Free

Example 733

Structure



Crystalline form: Colorless needles

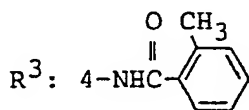
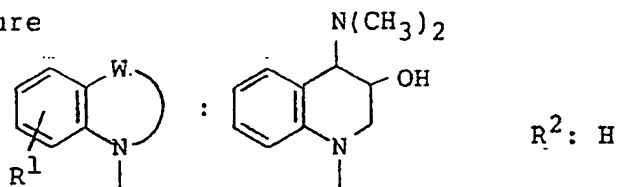
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 208 - 213°C

Form: Free

Example 734

Structure



Crystalline form: White powder

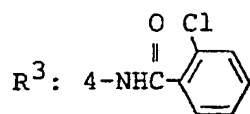
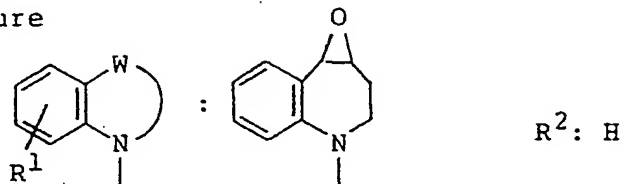
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 175 - 177°C

Form: Free

Example 735

Structure



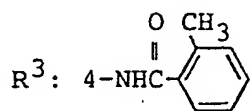
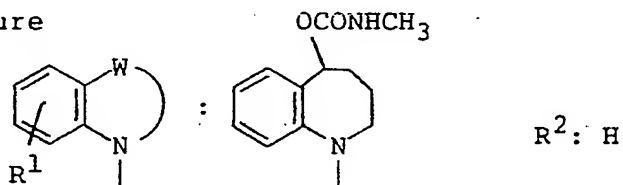
Crystalline form: White powder

NMR analysis: 131)

Form: Free

Example 736

Structure



Crystalline form: White powder

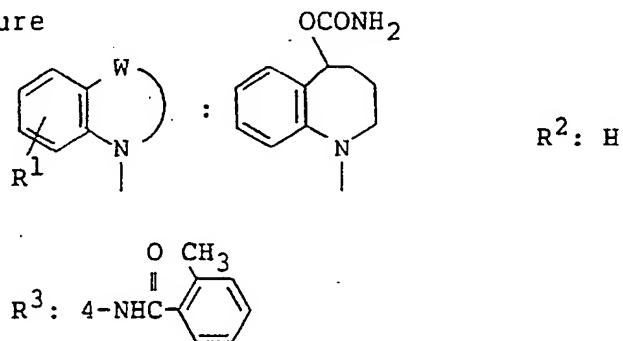
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 277 - 279°C

Form: Free

Example 737

Structure



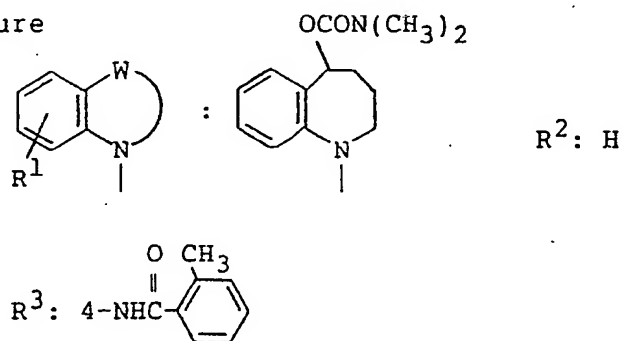
Crystalline form: Colorless amorphous

NMR analysis: 132)

Form: Free

Example 738

Structure



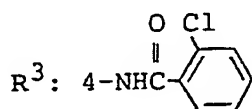
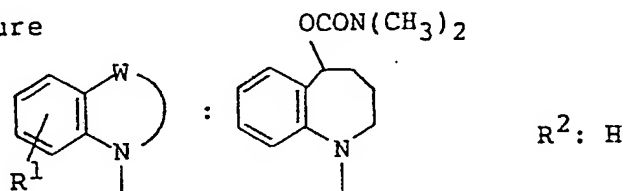
Crystalline form: Colorless amorphous

NMR analysis: 133)

Form: Free

Example 739

Structure



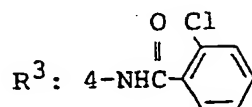
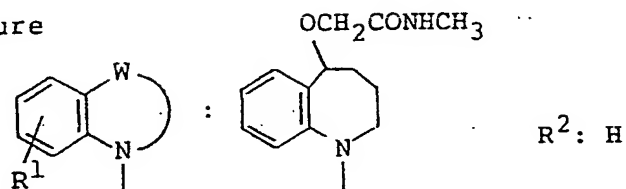
Crystalline form: Colorless amorphous

NMR analysis: 134)

Form: Free

Example 740

Structure



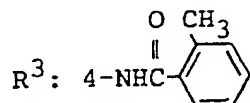
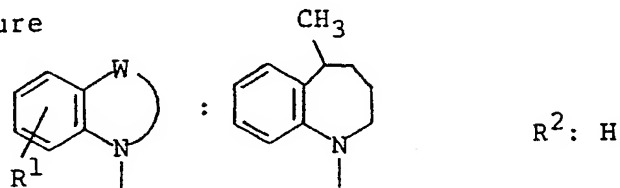
Crystalline form: Colorless amorphous

NMR analysis: 135)

Form: Free

Example 741

Structure



Crystalline form: White powder

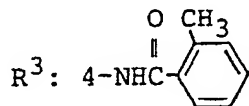
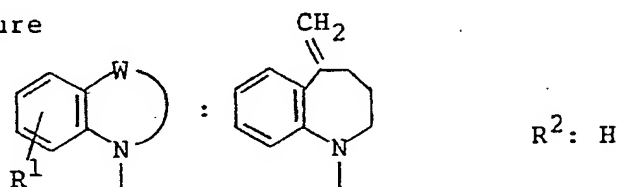
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 213 - 214°C

Form: Free

Example 742

Structure



Crystalline form: White powder

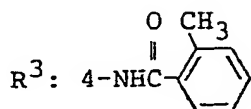
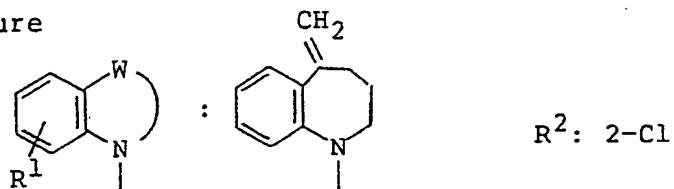
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 216 - 217°C

Form: Free

Example 743

Structure



Crystalline form: White powder

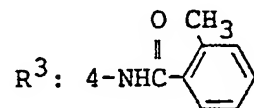
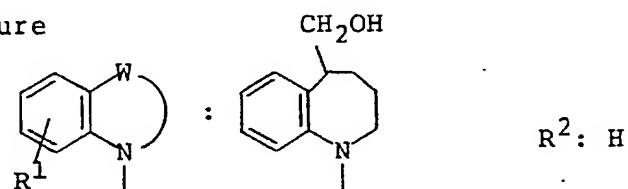
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 165 - 167°C

Form: Free

Example 744

Structure



Crystalline form: White powder

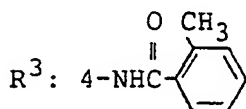
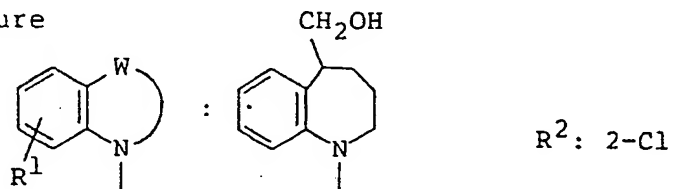
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 202 - 206°C

Form: Free

Example 745

Structure



Crystalline form: White powder

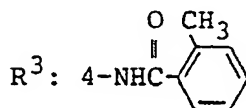
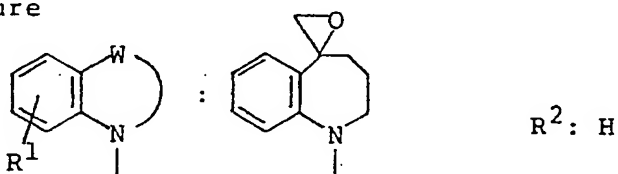
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 220 - 221.5°C

Form: Free

Example 746

Structure



Crystalline form: Colorless needles

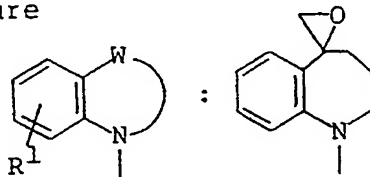
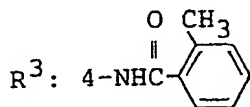
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 186 - 186.5°C

Form: Free

Example 747

Structure

 R^2 : 2-Cl

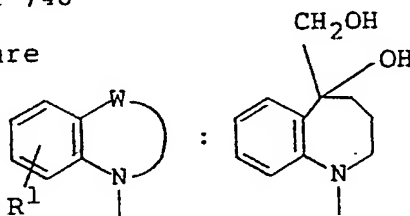
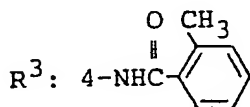
Crystalline form: Colorless amorphous

NMR analysis: 136)

Form: Free

Example 748

Structure

 R^2 : H

Crystalline form: White powder

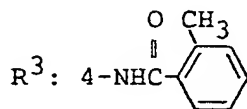
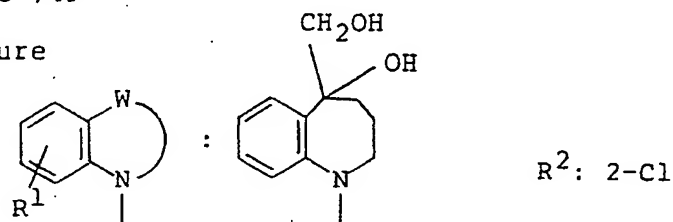
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 136 - 140°C

Form: Free

Example 749

Structure



Crystalline form: White powder

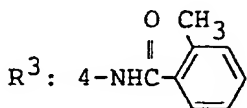
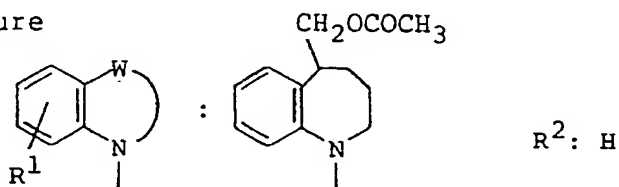
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 151 - 153°C

Form: Free

Example 750

Structure



Crystalline form: Colorless needles

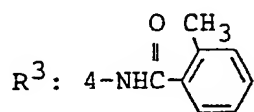
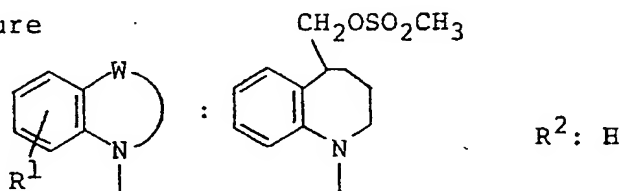
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 155 - 156°C

Form: Free

Example 751

Structure



Crystalline form: White powder

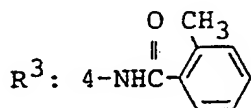
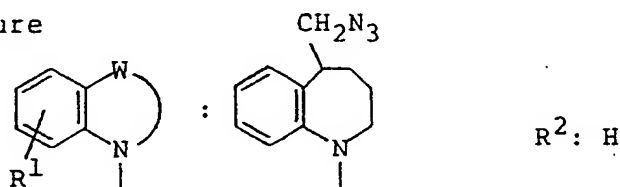
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 189 - 190°C

Form: Free

Example 752

Structure



Crystalline form: White powder

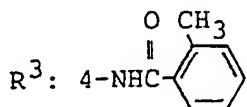
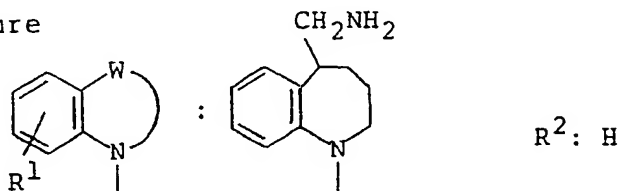
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 188 - 190°C

Form: Free

Example 753

Structure



Crystalline form: Colorless needles

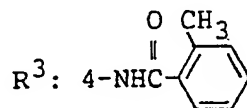
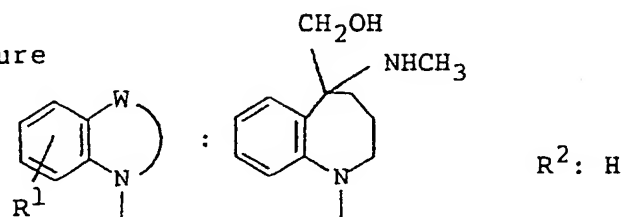
Recrystallization solvent: Ethanol

Melting Point: 233 - 235°C

Form: Free

Example 754

Structure



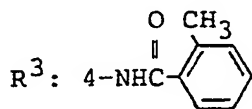
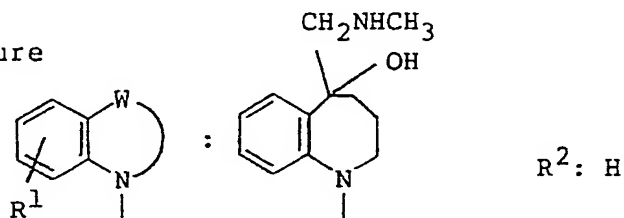
Crystalline form: Colorless amorphous

NMR analysis: 137)

Form: Free

Example 755

Structure



Crystalline form: White powder

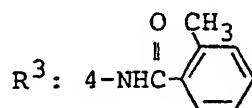
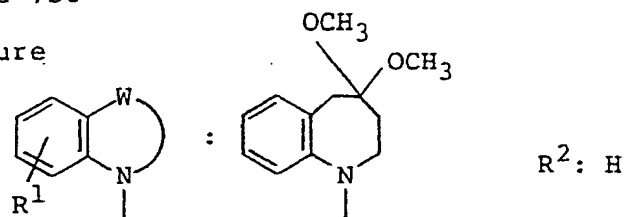
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 176 - 179°C

Form: Free

Example 756

Structure



Crystalline form: Colorless needles

Recrystallization solvent: Methanol/diethyl ether

Melting Point: 183 - 185°C

Form: Free

- 117) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.3-2.3 (4H, m), 3.1-3.4 (3H, m), 3.8-4.6 (2H, m), 5.0-5.3 (2H, m), 5.8-6.1 (1H, m), 6.8-8.5 (11H, m)
- 118) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.6-2.2 (4H, m), 2.46, 2.53 (3H, each s), 3.1-3.5 (3H, m), 3.8-4.6 (2H, m), 5.0-5.3 (2H, m), 5.8-6.1 (1H, m), 6.8-8.0 (11H, m)
- 119) $^1\text{H-NMR}(\text{DMSO}-d_6)$ δ ; 2.33 (3H, s), 3.36 (2H, m), 3.89 (1H, m), 4.41 (1H, m), 5.07 (1H, m), 5.40 (1H, d, $J=14.8$ Hz), 6.85 (1H, d, $J=7.2$ Hz), 7.15-7.65 (11H, m), 10.35 (1H, s)
- 120) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.25-5.05 (22H, m), 6.65-7.65 (11H, m), 7.75-8.25 (1H, m)
- 121) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.15-5.05 (19H, m), 6.75-7.85 (11H, m), 7.85-8.25 (1H, m)
- 122) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.25-2.85 (8H, m), 2.95 - 4.95 (2H, m), 6.75-7.85 (10H, m), 9.25-9.75 (1H, m)
- 123) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 0.20-0.70 (4H, m), 0.95-2.35 (6H, m), 2.65-5.00 (2H, m), 6.75-7.90 (10H, m), 8.65-9.25 (1H, m)
- 124) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.20-3.15 (11H, m), 3.45-3.70 (1H, m), 4.05-5.20 (1H, m), 6.60-7.65 (10H, m), 8.15-8.45 (2H, m)
- 125) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.19 (3H, t, $J=7$ Hz), 1.25-3.25 (8H, m), 3.46 (2H, q, $J=7$ Hz), 3.40-4.10 (3H, m), 4.45-5.10 (1H, m), 6.65-7.75 (12H, m), 8.30-8.60 (1H, m)

- 126) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10-1.30 (3H, m), 1.50-2.35 (4H, m), 2.65-3.05 (2H, m), 3.35-3.60 (2H, m), 3.80-4.05 (2H, m), 4.65-5.15 (2H, m), 6.55-7.85 (12H, m), 8.35-8.65 (1H, m)
- 127) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.20 (3H, t, $J=7$ Hz), 1.10-3.15 (11H, m), 3.45-3.65 (3H, m), 3.88 (2H, s), 3.95-5.15 (1H, m), 6.55-7.65 (13H, m), 8.37 (1H, s)
- 128) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 2.45 (3H, s), 3.40 (3H, s), 4.01 (2H, m), 4.38 (2H, m), 7.20-7.77 (13H, m)
- 129) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.35-4.55 (22H, m), 6.3-7.8 (13H, m)
- 130) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10 (6H, t, $J=7$ Hz), 1.35-5.1 (23H, m), 6.55-7.8 (13H, m)
- 131) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.94-3.21 (3H, m), 3.30-4.82 (3H, m), 6.57 (1H, d, $J=7.5$ Hz), 6.86-8.10 (11H, m), 8.72 (1H, brs)
- 132) $^1\text{H-NMR}(\text{DMSO}-d_6)$ δ ; 1.57-1.85 (2H, m), 1.85-2.28 (2H, m), 2.33 (3H, s), 2.64-2.86 (1H, m), 4.53-5.07 (1H, m), 5.79-5.94 (1H, m), 6.47-7.68 (2H, br), 6.64-6.77 (1H, m), 6.96-7.62 (12H, m)
- 133) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.61-1.97 (2H, m), 2.00-2.54 (2H, m), 2.47 (3H, s), 2.60-3.23 (7H, m), 4.76-5.22 (1H, m), 5.94-6.19 (1H, m), 6.61-6.74 (1H, m), 6.91-7.62 (12H, m)
- 134) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.68-1.97 (2H, m), 2.03-2.53 (2H, m), 2.61-3.24 (7H, m), 4.76-5.22 (1H, m), 5.97-6.17

- (1H, m), 6.59-6.74 (1H, m), 6.92-7.13 (1H, m),
7.13-7.58 (9H, m), 7.66-7.85 (1H, m), 7.85-8.00
(1H, m)
- 135) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.57-1.93 (2H, m), 1.93-2.54 (2H, m), 2.54-2.72 (1H, m), 2.79-3.09 (3H, m), 3.90-4.32 (2H, m), 4.49-5.18 (2H, m), 6.31-6.93 (2H, m), 6.96-7.63 (10H, m), 7.63-7.89 (1H, m), 7.89-8.16 (1H, m)
- 136) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.44-1.95 (2H, m), 1.95-2.28 (2H, m), 2.40-2.67 (3H, m), 2.73-3.38 (3H, m), 3.40-3.97 (1H, m), 4.50-5.20 (1H, m), 6.67-8.11 (11H, m)
- 137) $^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.50-2.10 (3H, m), 2.10-2.28 (1H, m), 2.36 (3H, s), 2.48 (3H, s), 2.68-2.97 (1H, m), 3.26-3.47 (1H, m), 4.16 (1H, d, $J=13.8$ Hz), 4.25 (1H, d, $J=13.8$ Hz), 5.95 (1H, brs), 6.60-6.76 (1H, m), 6.97-7.52 (8H, m), 7.52-7.73 (2H, m), 7.73-7.97 (2H, m)

Example 757

A mixture of 5-dimethylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (10 g), methyl iodide (1.7 ml) and chloroform (10 ml) is heated with stirring at 100°C for 3 hours in an autoclave. After completion of the reaction, the solvent is distilled off under reduced pressure and the resulting residue is dissolved in methanol. The mixture is treated with IRA-400 (trade mark; Organo Co., Ltd., OH⁻ type). Methanol is

distilled off and the resulting residue is suspended in *t*-butyl alcohol (90 ml), and thereto is added potassium *t*-butoxide (2.3 g). The mixture is refluxed for 5 hours. The solvent is distilled off under reduced pressure, and the resulting residue is dissolved in dichloromethane. The mixture is washed successively with water and saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and to the resulting residue is added dichloromethane/diethyl ether. The precipitated crude crystal is recrystallized from ethanol to give 1-[4-(2-chlorobenzoylamino)benzoyl]-2,3-dihydro-1H-benzazepine (5.15 g) as colorless needles, m.p. 205 - 207°C.

Example 758

1-[4-(2-Chlorobenzoylamino)benzoyl]-2,3-dihydro-1H-benzazepine (4.7 g) is dissolved in dichloromethane (50 ml) and thereto is added 80 % *m*-chloroperbenzoic acid (3 g). The mixture is stirred at room temperature overnight. The dichloromethane layer is washed successively with saturated aqueous sodium hydrogen carbonate solution and saturated saline solution, and the solvent is distilled off under reduced pressure. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1) to give 4,5-epoxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (4.26 g) as white powder.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.94-3.21 (3H, m), 3.30-4.82 (3H,

m), 6.57 (1H, d, J=7.5 Hz), 6.86-8.10 (11H, m), 8.72 (1H, brs)

Example 759

A mixture of 4,5-epoxy-1-[4-(2-chlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.5 g), dimethylamine hydrochloride (2.6 g), triethylamine (4.5 g) and methanol (15 ml) is refluxed for 19 hours. After completion of the reaction, the solvent is distilled off and the resulting residue is dissolved in dichloromethane. The mixture is washed successively with water and saturated saline solution. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from ethanol/diethyl ether to give trans-5-dimethylamino-4-hydroxy-1-[4-(2-chlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.38 g) as colorless needles, m.p. 180 - 182°C.

Using the suitable starting materials, the compounds of the above Examples 733 and 734 are obtained in the same manner as in Example 759.

Example 760

Methyltriphenylphosphonium bromide (4.30 g) is suspended in tetrahydrofuran (100 ml) and thereto is added potassium t-butoxide (1.58 g) under ice-cooling. The mixture is stirred at -5°C for 1 hour and thereto is added 5-oxo-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-

tetrahydro-1H-benzazepine (1.60 g) and the mixture is stirred at room temperature for 1 hour. The reaction solution is poured into ice-water (200 ml) and extracted with ethyl acetate. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 1 : 2), and recrystallized from ethyl acetate/n-hexane to give 5-methylidene-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.34 g) as white powder, m.p. 216 - 217°C.

Using the suitable starting materials, the compound of the above Example 743 is obtained in the same manner as in Example 760.

Example 761

5-Methylidene-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2.84 g) is suspended in tetrahydrofuran (50 ml) and thereto is added 1 M solution of boran-tetrahydrofuran complex in tetrahydrofuran (43 ml). The mixture is stirred at room temperature for 6 hours. After completion of the reaction, the reaction solution is cooled with ice, and thereto is added water (70 ml). After termination of the evolution of hydrogen gas, to the reaction solution are added 25 % aqueous sodium hydroxide solution (7.0 ml), and subsequently 31 % aqueous hydrogen peroxide solution (4.7 ml), and the mixture is heated with

stirring at 50°C for 1 hour. After cooling, to the reaction solution is added saturated saline solution and the tetrahydrofuran layer is collected, washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is recrystallized from ethyl acetate/n-hexane to give 5-hydroxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.96 g) as white powder, m.p. 202 - 206°C.

Using the suitable starting materials, the compound of the above Example 745 is obtained in the same manner as in Example 761.

Example 762

5-Methylidene-1-[2-chloro-4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.81 g) is dissolved in dichloromethane (30 ml) and thereto is added m-chloroperbenzoic acid (0.57 g). The mixture is stirred at room temperature for 15 hours. After completion of the reaction, the reaction solution is washed successively with aqueous sodium hydrogensulfite solution, aqueous sodium hydrogen carbonate solution and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified with silica gel column chromatography (eluent; ethyl acetate : n-hexane = 2 : 3) to give 5,5-epoxy-1-[2-chloro-4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g) as

colorless amorphous.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.44-1.95 (2H, m), 1.95-2.28 (2H, m), 2.40-2.67 (3H, m), 2.73-3.38 (3H, m), 3.40-3.97 (1H, m), 4.50-5.20 (1H, m), 6.67-8.11 (11H, m)

Using the suitable starting materials, the compound of the above Example 746 is obtained in the same manner as in Example 762.

Example 763

To 5-methylidene-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.60 g) are added successively t-butyl alcohol (6.0 ml), water (1.2 ml), pyridine (0.3 ml), osmium tetroxide (1.2 mg) and trimethylamine N-oxide dihydrate (0.22 g), and the mixture is refluxed with stirring for 2.5 hours. After cooling, to the reaction solution is added 20 % aqueous sodium hydrogen-sulfite solution (10 ml), and the mixture is stirred at room temperature for 1.5 hour. The reaction solution is extracted with a mixture of ethyl acetate/tetrahydrofuran (1:1). The extract is washed successively with diluted hydrochloric acid and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is recrystallized from ethyl acetate/n-hexane to give 5-hydroxymethyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.55 g) as white powder, m.p. 136 - 140°C.

Using the suitable starting materials, the compound

of the above Example 749 is obtained in the same manner as in Example 763.

Example 764

To 5-hydroxymethyl-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.40 g) are added acetic anhydride (4.0 ml) and pyridine (0.5 ml), and the mixture is stirred at room temperature for 5 hours. After completion of the reaction, the reaction solution is poured into ice-water and extracted with ethyl acetate. The extract is washed successively with diluted hydrochloric acid and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is recrystallized from ethyl acetate/n-hexane to give 5-acetyloxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.43 g) as colorless needles, m.p. 155 - 156°C.

Example 765

5-Hydroxymethyl-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.70 g) is dissolved in a mixture (30 ml) of dichloromethane/acetonitrile (1:1) and thereto are added methanesulfonyl chloride (0.8 ml) and pyridine (1.0 ml), and the mixture is refluxed with stirring for 2 hours. After cooling, the reaction solution is evaporated under reduced pressure and to the resulting residue is added water and then extracted with ethyl acetate. The extract is washed successively with

diluted hydrochloric acid and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is recrystallized from ethyl acetate/n-hexane to give 5-methanesulfonyloxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.72 g) as white powder, m.p. 189 - 190°C.

Example 766

5-Methanesulfonyloxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.49 g) is dissolved in a mixture (25 ml) of acetonitrile/dimethylformamide (4:1) and thereto is added sodium azide (0.11 g). The mixture is refluxed with stirring for 3.5 hours. After cooling, the reaction solution is poured into ice-water (40 ml), extracted with ethyl acetate, washed with saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 1 : 2), and recrystallized from ethyl acetate/n-hexane to give 5-azidomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.29 g) as white powder, m.p. 188 - 189°C.

Example 767

5-Azidomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.27 g) is suspended in ethanol (50 ml) and the mixture is subjected to catalytic

hydrogenation at room temperature under 3 kg/cm² for 6 hours by using 10 % Pd-C (27 mg). The catalyst is removed by filtration with celite and the filtrate is distilled off and the resulting residue is recrystallized from ethanol to give 5-aminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.12 g) as colorless needles, m.p. 233 - 235°C.

Example 768

To 5,5-epoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.30 g) is added 30 % solution of methylamine in methanol (30 ml), and the mixture is refluxed for 14 hours. After completion of the reaction, the reaction solution is evaporated under reduced pressure and the resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 1 : 1 + dichloromethane : methanol : aqueous ammonia = 60 : 10 : 1) to give 5-hydroxymethyl-5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (A; 35.3 mg) and 5-methylaminomethyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (B; 109 mg).

(A); Colorless amorphous

¹H-NMR(CDCl₃) δ ; 1.50-2.10 (3H, m), 2.10-2.28 (1H, m), 2.36 (3H, s), 2.48 (3H, s), 2.68-2.97 (1H, m), 3.26-3.47 (1H, m), 4.16 (1H, d, J=13.8 Hz), 4.25 (1H, d, J=13.8 Hz), 5.95 (1H, brs), 6.60-6.76 (1H, m), 6.97-7.52 (8H, m), 7.52-

7.73 (2H, m), 7.73-7.97 (2H, m)

(B); White powder (recrystallized from ethyl acetate/
n-hexane)

m.p. 176 - 179°C

Example 769

5-Methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine (1 g) is dissolved in
dimethylformamide (10 ml) and thereto are added potassium
carbonate (0.5 g) and ethyl iodide (0.45 g). The mixture is
stirred at room temperature overnight. After completion of
the reaction, the reaction solution is poured into ice-water
and the precipitated crystal is collected by filtration, and
purified by silica gel column chromatography (eluent;
dichloromethane : methanol = 90 : 1), and recrystallized
from diisopropyl alcohol/petroleum ether to give 5-(N-
methyl-N-ethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine (50 mg) as white powder,
m. p. 192 - 193°C.

Using the suitable starting materials, the
compounds of the above Examples 244, 246 - 248, 330, 339,
342, 346, 350, 366, 375, 376, 406, 418, 453, 455, 457, 460,
464, 467, 506, 507, 537 - 545, 547, 549 - 556, 561 - 566,
568 - 571, 577, 601 - 603, 607 - 625, 654 - 672, 675, 677 -
681, 691 - 695, 697, 698, 701 - 705, 707, 708, 712, 713,
715, 716, 719, 720 and 722 - 725 are obtained in the same
manner as in Example 769.

Example 770

To a suspension of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (3 g) in methanol (30 ml) are added potassium carbonate (1.5 g) and epichlorohydrine (5.7 ml), and the mixture is refluxed for 3 hours. The solvent is distilled off and to the resulting residue is added water and extracted three times with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 80 : 1) to give 5-(N-methyl-N-oxiranylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (C; 1.92 g) and 5-[N-methyl-N-(2-hydroxy-3-methoxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (D; 0.38 g).

(C); Colorless needles (recrystallization from ethyl acetate)

m.p. 239 - 240°C

(D); Colorless amorphous

¹H-NMR(CDCl₃) δ: 1.35-4.55 (22H, m), 6.3-7.8 (13H, m)

Example 771

5-[N-Methyl-N-oxiranylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.5 g) is dissolved in methanol (10 ml) and thereto is added

diethylamine (0.13 ml). The mixture is refluxed for 3 hours. After completion of the reaction, the solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1 + dichloromethane : methanol : aqueous ammonia = 9 : 1 : 0.1) to give 5-[N-methyl-N-(2-hydroxy-3-diethylaminopropyl)amino]-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.38 g) as colorless amorphous.

$^1\text{H-NMR}(\text{CDCl}_3)$ δ ; 1.10 (6H, t, J=7 Hz), 1.35-5.1 (23H, m), 6.55-7.8 (13H, m)

Example 772

A solution of 5-hydroxyimino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.06 g) in acetic anhydride (10 ml) and pyridine (10 ml) is stirred at room temperature overnight. After completion of the reaction, the reaction solution is concentrated. To the resulting residue is added water and the mixture is extracted with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 80 : 1), and recrystallized from ethanol/petroleum ether to give 5-acetyloxyimino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.75 g) as colorless prisms, m.p.

142 - 144°C.

Example 773

Using the suitable starting materials, the compounds of the above Examples 671 and 672 are obtained in the same manner as in Example 380.

Example 774

Using the suitable starting materials, the compounds of the above Examples 674, 699, 700, 706, 718 and 730 are obtained in the same manner as in Example 384.

Example 775

Using the suitable starting materials, the compounds of the above Examples 654 - 672, 675, 677 - 687, 691 - 695, 697, 698, 701 - 705, 707, 708, 712, 713, 715, 716 and 719 - 725 are obtained in the same manner as in Example 390.

Example 776

Using the suitable starting materials, the compounds of the above Examples 654 - 672, 675, 677 - 679, 691 - 693, 698, 701 - 705, 707, 708, 712, 713, 715, 716 and 719 - 725 are obtained in the same manner as in Example 388.

Example 777

Using the suitable starting materials, the compounds of the above Examples 705, 706 and 708 are obtained in the same manner as in Example 394.

Example 778

Using the suitable starting materials, the compound

of the above Example 671 is obtained in the same manner as in Example 397.

Example 779

Using the suitable starting materials, the compound of the above Example 672 is obtained in the same manner as in Example 402.

Example 780

Using the suitable starting materials, the compound of the above Example 726 is obtained in the same manner as in Example 634.

Example 781

Using the suitable starting materials, the compound of the above Example 740 is obtained in the same manner as in Examples 638 and 640.

Example 782

Using the suitable starting materials, the compound of the above Example 689 is obtained in the same manner as in Example 643.

Example 783

Using the suitable starting materials, the compound of the above Example 690 is obtained in the same manner as in Example 644.

Example 784

Using the suitable starting materials, the following compound is obtained in the same manner as in Examples 1, 382, 388 and 390.

5-Dimethylamino-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride, colorless needles (recrystallized from ethanol/water), m.p. 233 - 237°C

Reference Example 13

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

5-(2-Chloroacetyloxy)-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 156 - 159°C (recrystallized from ethyl acetate/n-hexane)

5-(2-Dimethylaminoacetyloxy)-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 108 - 109°C (recrystallized from ethyl acetate/n-hexane)

5-Oxo-7-chloro-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 157.5 - 159.5°C (recrystallized from diethyl ether/dichloromethane)

5-Oxo-8-chloro-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 151.5 - 153.5°C (recrystallized from diethyl ether/dichloromethane)

Reference Example 14

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

5-(2-Dimethylaminoacetyloxy)-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.63-1.98 (2H, m), 1.98-2.25 (1H, m), 2.27 (3H, s), 2.43 (3H, s), 2.65-3.23 (2H, m), 3.38 (2H, s), 3.67 (2H, brs), 4.77-5.28 (1H, m), 6.04-6.31 (1H, m), 6.31-6.56 (2H, m), 6.58-6.86 (1H, m), 6.86-7.46 (5H, m)

5-Oxo-7-chloro-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 193 - 193.5°C
(recrystallized from diethyl ether/dichloromethane)

5-Oxo-8-chloro-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 171 - 174°C
(recrystallized from diethyl ether/dichloromethane)

Reference Example 15

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

5-Dimethylaminocarbonylmethoxy-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 129 - 131°C (recrystallized from ethyl acetate/n-hexane)

6-Oxo-1-(4-nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, yellow needles

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.3 (4H, m), 2.5-5.2 (4H, m), 6.7-6.9 (1H, m), 7.27-7.5 (4H, m), 7.90-8.15 (3H, m)

6-Chloro-5-oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 198 - 202°C
(recrystallized from dichloromethane/diethyl ether)

Reference Example 16

Using the suitable starting materials, the

following compounds are obtained in the same manner as in Reference Example 2.

5-Dimethylaminocarbonylmethoxy-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.52-2.10 (3H, m), 2.10-3.20 (2H, m), 2.97 (3H, s), 3.05 (3H, s), 4.03-4.48 (2H, m), 4.50-5.35 (2H, m), 6.26-6.57 (2H, m), 6.57-6.88 (1H, m), 6.88-7.76 (5H, m)

6-Oxo-1-(4-aminobenzoyl)-1,2,3,4,5,6-hexahydro-benzazocine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.7-2.2 (4H, m), 2.5-5.2 (6H, m), 6.42 (2H, d, $J=8.7$ Hz), 6.75-6.9 (1H, m), 7.05-7.4 (4H, m), 7.95-8.1 (1H, m)

6-Chloro-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 166 - 169°C (recrystallized from dichloromethane/diethyl ether)

9-Chloro-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 192.5 - 195°C (recrystallized from dichloromethane/diethyl ether)

Reference Example 17

5-Dimethylamino-1-(2-methyl-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (86.0 g) is dissolved in ethanol (800 ml), and thereto is added platinum oxide (10 g). The mixture is subjected to hydrogenation at ordinary temperature under atmospheric pressure of hydrogen for 4 hours. The catalyst is removed by filtration, and the

solvent is distilled off. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 200 : 1 + 100 : 1), and further purified by silica gel thin layer chromatography (developer; chloroform : methanol = 10 : 1), and recrystallized from methanol/diethyl ether to give 5-dimethylamino-1-(2-methyl-4-amino-benzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (G) (Rf: 0.52, 27.4 g) and 5-dimethylamino-1-(2-methyl-4-amino-benzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (H) (Rf: 0.48, 12.3 g).

(G): White powder

M.p. 154 - 156°C

$[\alpha]_D^{22} = 0^\circ$ (c=1.0, chloroform)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-1.50 (1H, m), 1.50-2.00 (1H, m), 2.00-2.35 (11H, m), 2.90-5.18 (5H, m), 6.00-6.76 (3H, m), 6.81-7.64 (4H, m)

(H): White powder

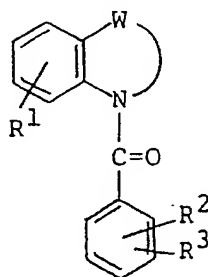
M.p. 169.5 - 170°C

$[\alpha]_D^{22} = 0^\circ$ (c=1.5, chloroform)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.11 - 2.90 (13H, m), 2.91-5.23 (5H, m), 6.15-6.53 (1H, m), 6.57-7.62 (6H, m)

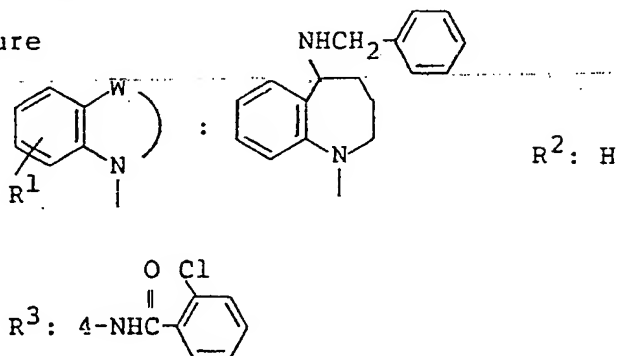
Using the suitable starting materials, the compounds of the following Table 5 are obtained in the same manner as in above Examples 1 and 382.

Table 5



Example 785

Structure



Crystalline form: Colorless needles

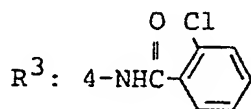
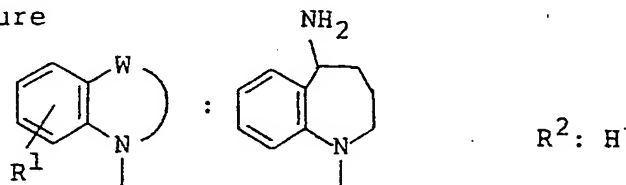
Recrystallization solvent: Ethanol

Melting Point: 174 - 175°C

Form: Free

Example 786

Structure



Crystalline form: Colorless prisms

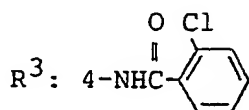
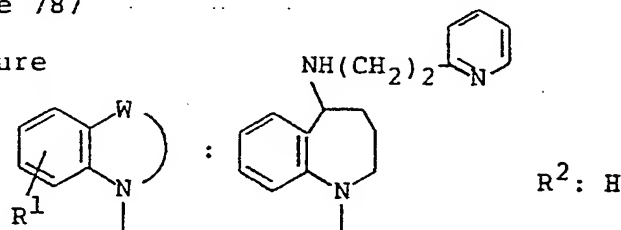
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 176 - 178°C

Form: Free

Example 787

Structure



Crystalline form: Colorless prisms

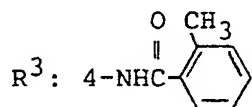
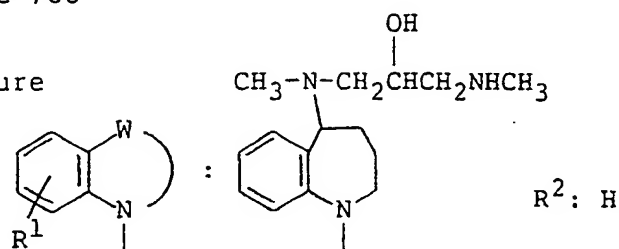
Recrystallization solvent: Ethyl acetate/petroleum ether

Melting Point: 154.5 - 155°C

Form: Free

Example 788

Structure



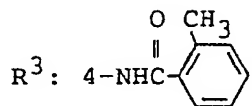
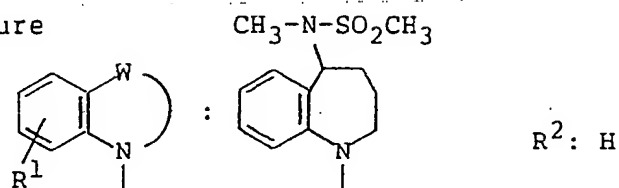
Crystalline form: Colorless amorphous

NMR analysis: 138)

Form: Free

Example 789

Structure



Crystalline form: Colorless scales

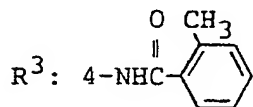
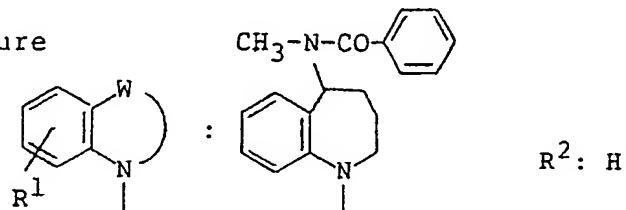
Recrystallization solvent: Ethanol

Melting Point: 197 - 198°C

Form: Free

Example 790

Structure



Crystalline form: Colorless needles

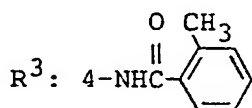
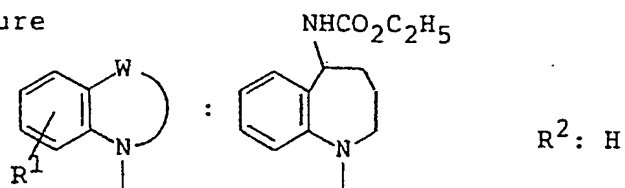
Recrystallization solvent: Ethanol

Melting Point: 248 - 249°C

Form: Free

Example 791

Structure



Crystalline form: Colorless needles

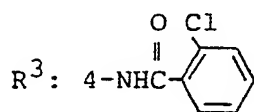
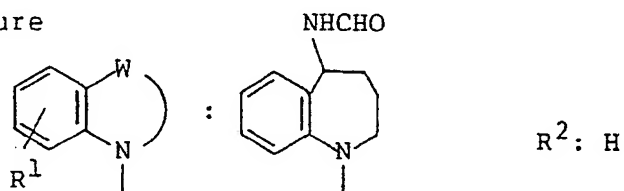
Recrystallization solvent: Ethanol/n-hexane

Melting Point: 162 - 163°C

Form: Free

Example 792

Structure



Crystalline form: Colorless prisms

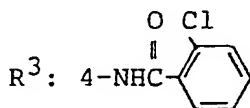
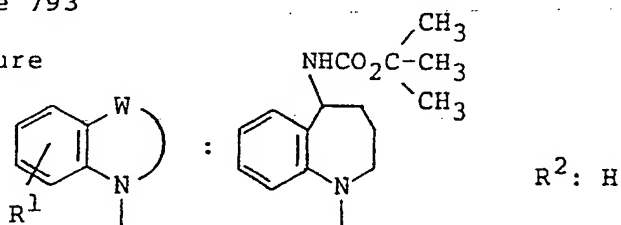
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 235 - 236.5°C

Form: Free

Example 793

Structure



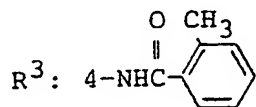
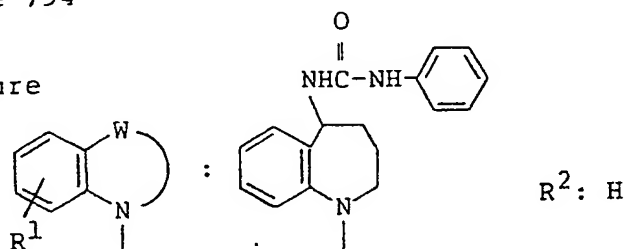
Crystalline form: Colorless amorphous

NMR analysis: 139)

Form: Free

Example 794

Structure



Crystalline form: Colorless prisms

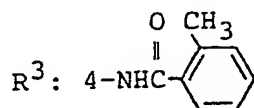
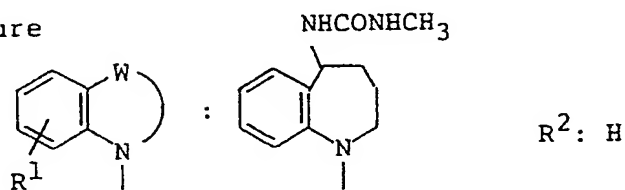
Recrystallization solvent: Dioxane

Melting Point: 269 - 271°C

Form: Free

Example 795

Structure



Crystalline form: Colorless prisms

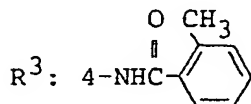
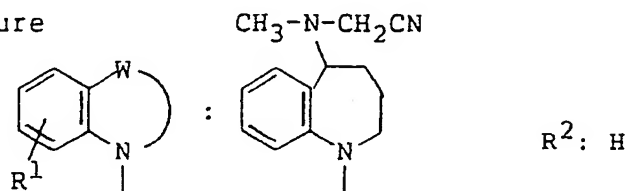
Recrystallization solvent: Dimethylformamide

Melting Point: 286 - 287°C

Form: Free

Example 796

Structure



Crystalline form: Colorless needles

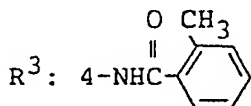
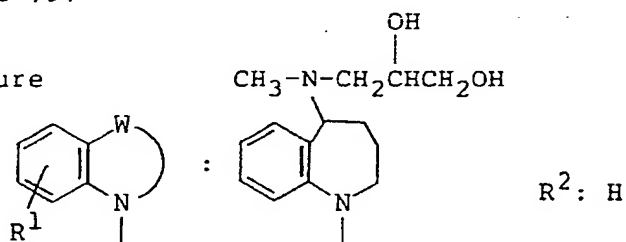
Recrystallization solvent: Acetonitrile

Melting Point: 227 - 228°C

Form: Free

Example 797

Structure



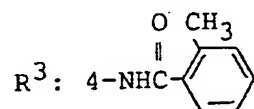
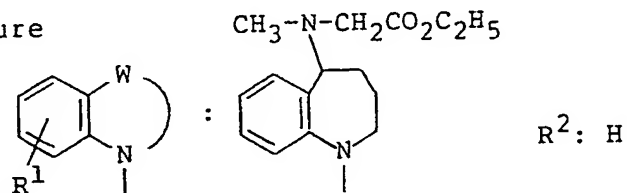
Crystalline form: Colorless amorphous

NMR analysis: 140)

Form: Free

Example 798

Structure



Crystalline form: Colorless prisms

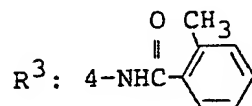
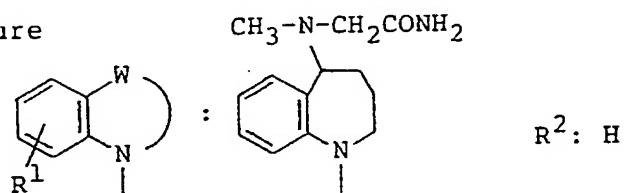
Recrystallization solvent: Ethyl acetate/petroleum ether

Melting Point: 167 - 168°C

Form: Free

Example 799

Structure

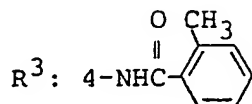
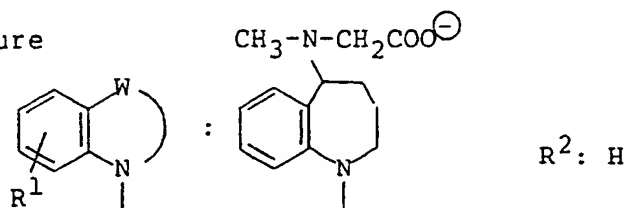


Crystalline form: Colorless amorphous

NMR analysis: 141)

Example 800

Structure



Crystalline form: Colorless needles

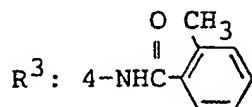
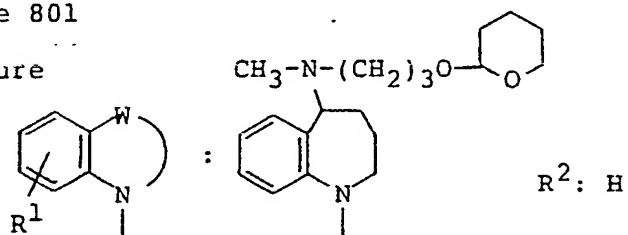
Recrystallization solvent: Diethyl ether

Melting Point: 164 - 171°C

Form: K^\oplus

Example 801

Structure



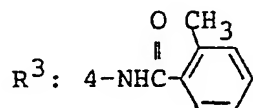
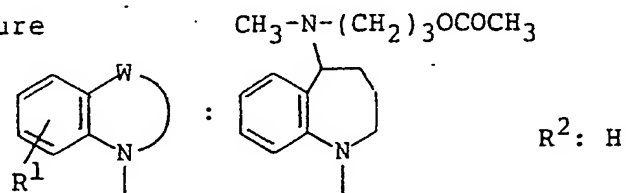
Crystalline form: Colorless amorphous

NMR analysis: 142)

Form: Free

Example 802

Structure



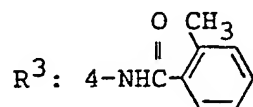
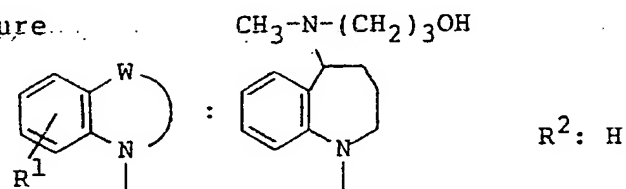
Crystalline form: Colorless amorphous

NMR analysis: 143)

Form: Free

Example 803

Structure



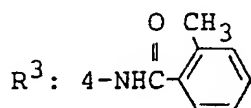
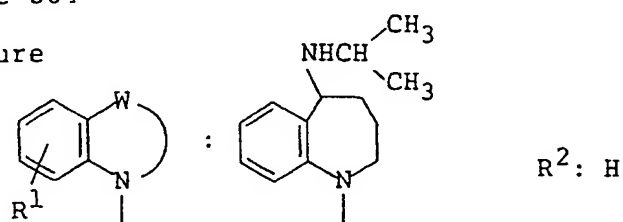
Crystalline form: Colorless amorphous

NMR analysis: 144)

Form: Free

Example 804

Structure



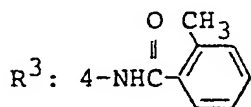
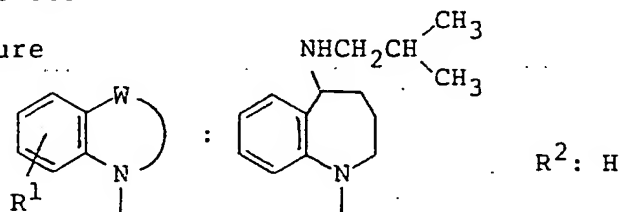
Crystalline form: Colorless amorphous

NMR analysis: 145)

Form: Free

Example 805

Structure



Crystalline form: Colorless needles

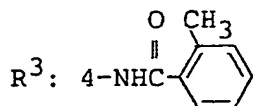
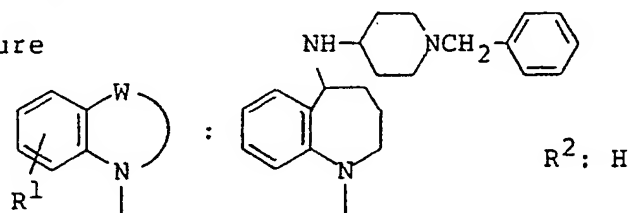
Recrystallization solvent: Ethanol

Melting Point: 207 - 208°C

Form: Free

Example 806

Structure



Crystalline form: White powder

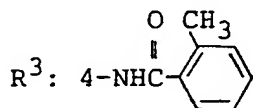
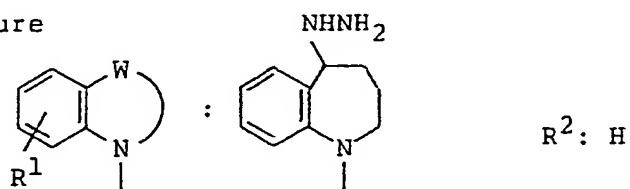
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 187 - 189°C

Form: Free

Example 807

Structure



Crystalline form: Colorless prisms

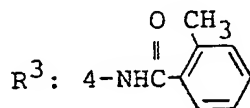
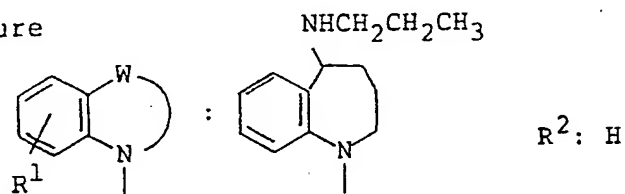
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 217 - 218°C

Form: Free

Example 808

Structure



Crystalline form: Colorless needles

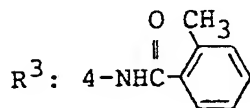
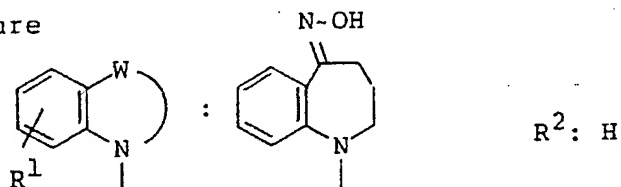
Recrystallization solvent: Ethyl acetate

Melting Point: 170 - 171°C

Form: Free

Example 809

Structure



Crystalline form: Colorless prisms

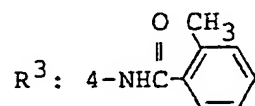
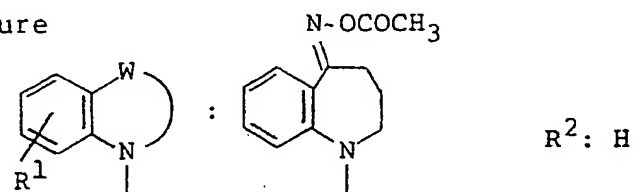
Recrystallization solvent: Ethanol

Melting Point: 239.5 - 241°C

Form: Free

Example 810

Structure



Crystalline form: Colorless needles

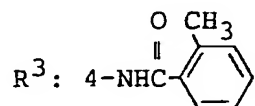
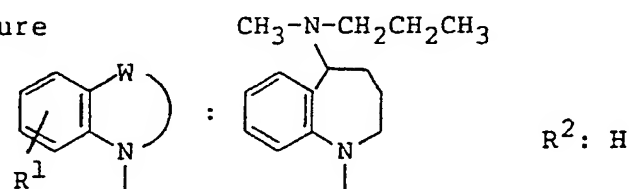
Recrystallization solvent: Ethanol

Melting Point: 190 - 191°C

Form: Free

Example 811

Structure



Crystalline form: Colorless prisms

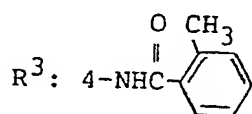
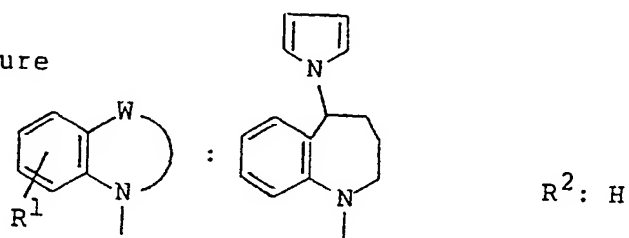
Recrystallization solvent: Diethyl ether

Melting Point: 163 - 163.5°C

Form: Free

Example 812

Structure



Crystalline form: Colorless prisms

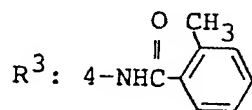
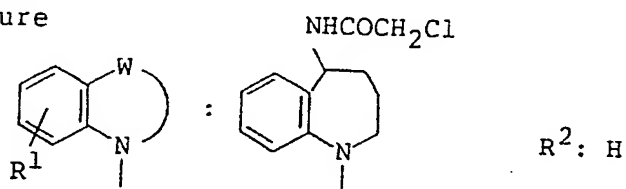
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 208 - 210°C

Form: Free

Example 813

Structure



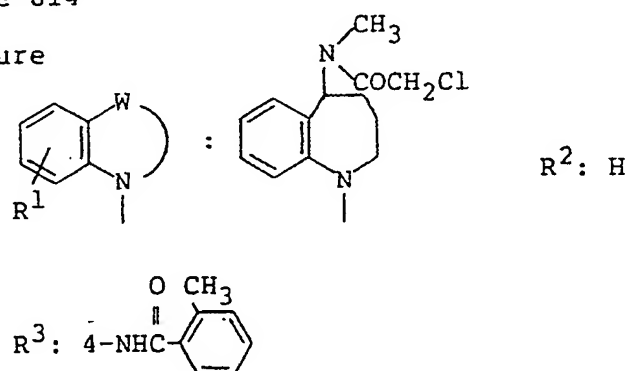
Crystalline form: White powder

NMR analysis: 146)

Form: Free

Example 814

Structure



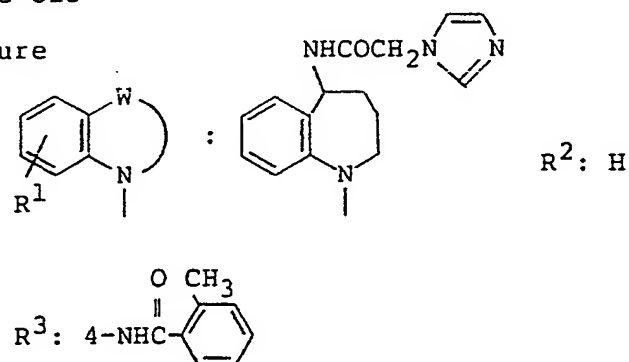
Crystalline form: Colorless amorphous

NMR analysis: 147)

Form: Free

Example 815

Structure



Crystalline form: Colorless needles

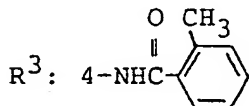
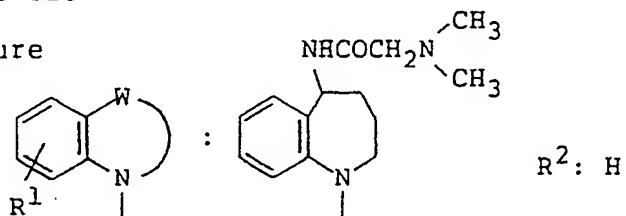
Recrystallization solvent: Ethanol/n-hexane

Melting Point: 250 - 252°C

Form: Free

Example 816

Structure



Crystalline form: Colorless prisms

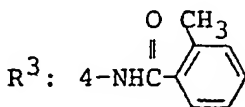
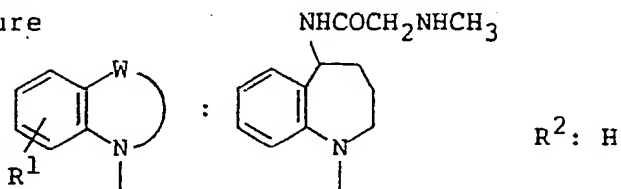
Recrystallization solvent: Ethyl acetate

Melting Point: 214 - 216°C

Form: Free

Example 817

Structure



Crystalline form: Colorless prisms

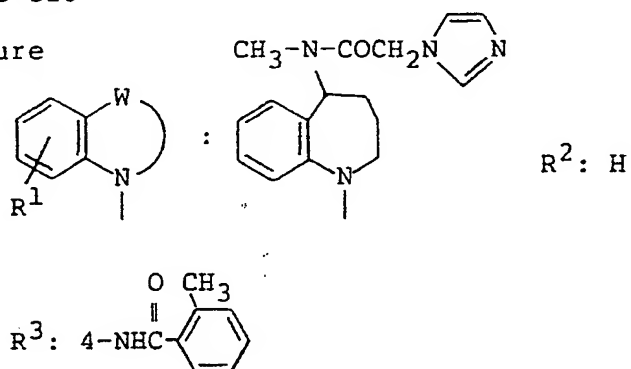
Recrystallization solvent: Ethanol/n-hexane

Melting Point: 243 - 245°C

Form: Free

Example 818

Structure



Crystalline form: Colorless prisms

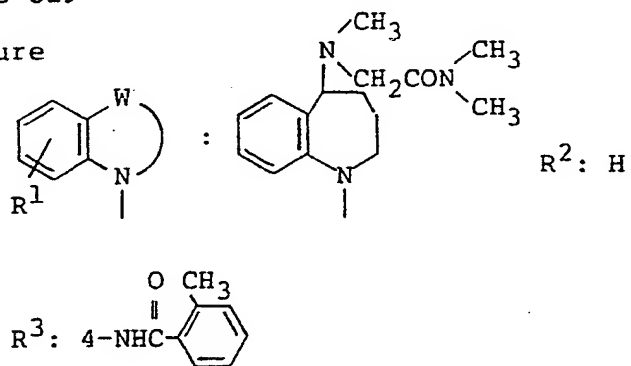
Recrystallization solvent: Diethyl ether

Melting Point: 159 - 162°C

Form: Free

Example 819

Structure



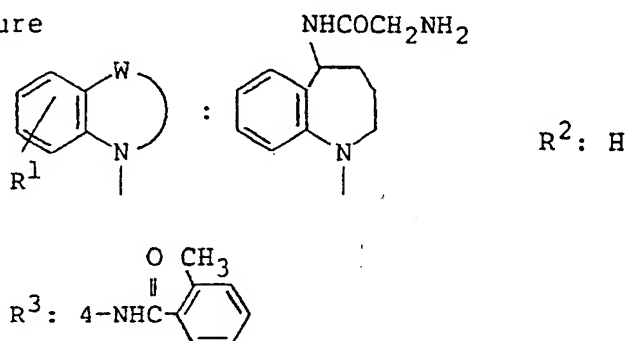
Crystalline form: Colorless amorphous

NMR analysis: 148)

Form: Free

 Example 820

Structure



Crystalline form: Colorless prisms

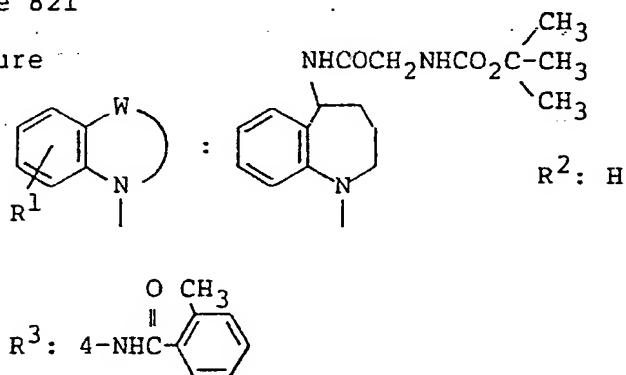
Recrystallization solvent: Ethyl acetate

Melting Point: 287 - 289°C

Form: Free

 Example 821

Structure



Crystalline form: Colorless prisms

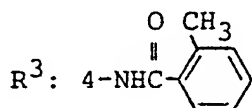
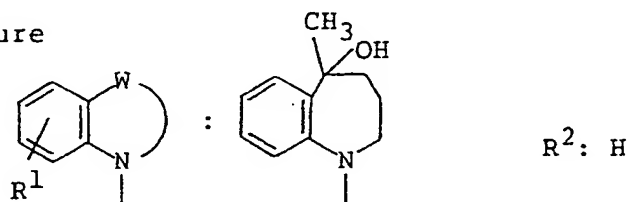
Recrystallization solvent: Diethyl ether

Melting Point: 170 - 171°C

Form: Free

Example 822

Structure



Crystalline form: White powder

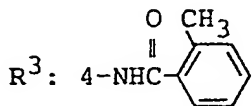
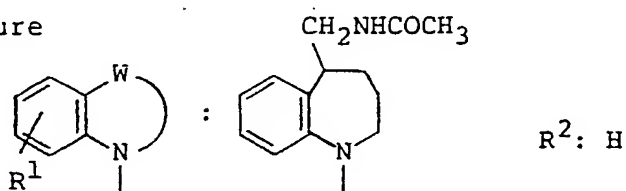
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 204 - 205°C

Form: Free

Example 823

Structure



Crystalline form: White powder

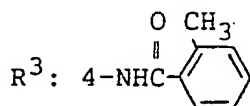
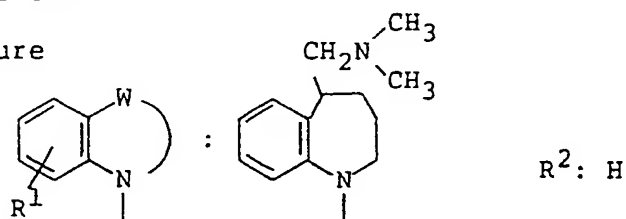
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 273 - 273.5°C

Form: Free

Example 824

Structure



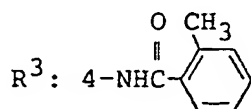
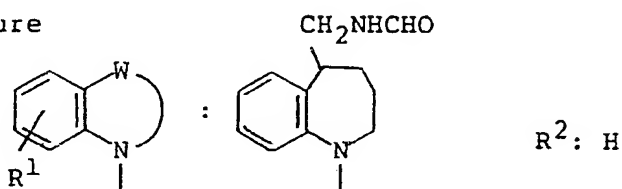
Crystalline form: Colorless amorphous

NMR analysis: 149)

Form: Free

Example 825

Structure



Crystalline form: White powder

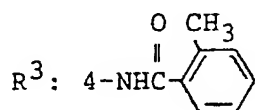
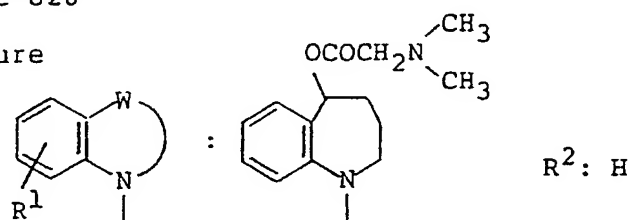
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 240 - 241°C

Form: Free

Example 826

Structure



Crystalline form: White powder

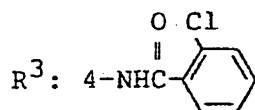
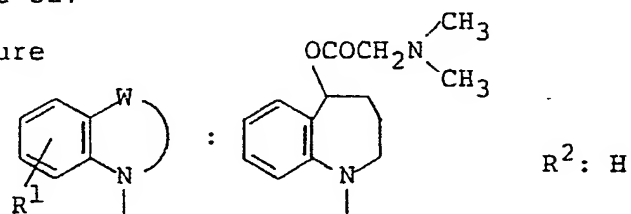
Recrystallization solvent: Acetonitrile/ethanol

Melting Point: 231 - 232°C

Form: Free

Example 827

Structure



Crystalline form: White powder

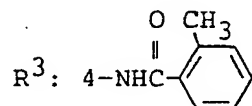
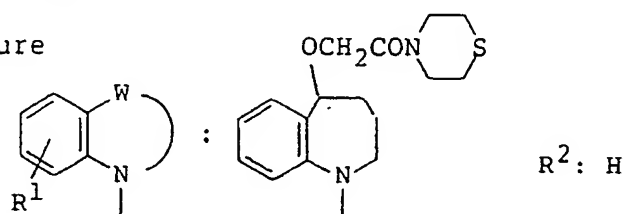
Recrystallization solvent: Acetonitrile/ethanol

Melting Point: 222 - 224°C

Form: Free

Example 828

Structure



Crystalline form: White powder

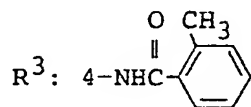
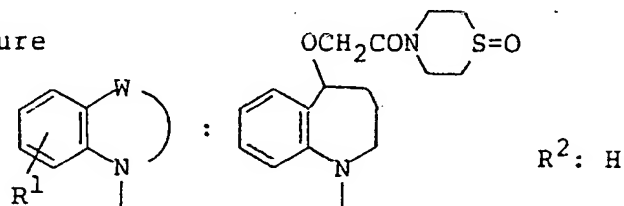
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 235 - 237°C

Form: Free

Example 829

Structure



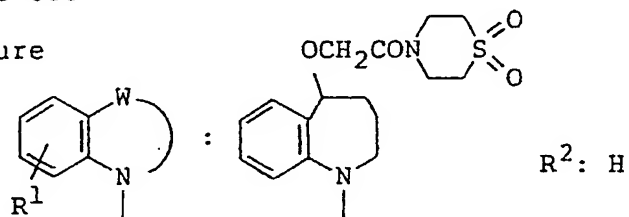
Crystalline form: Colorless amorphous

NMR analysis: 150)

Form: Free

Example 830

Structure



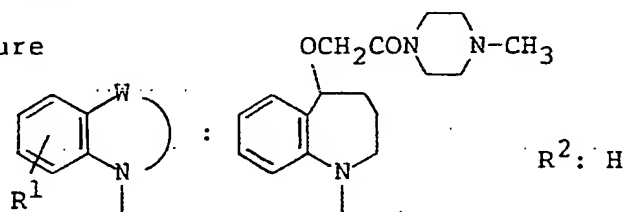
Crystalline form: Colorless amorphous

NMR analysis: 151)

Form: Free

Example 831

Structure



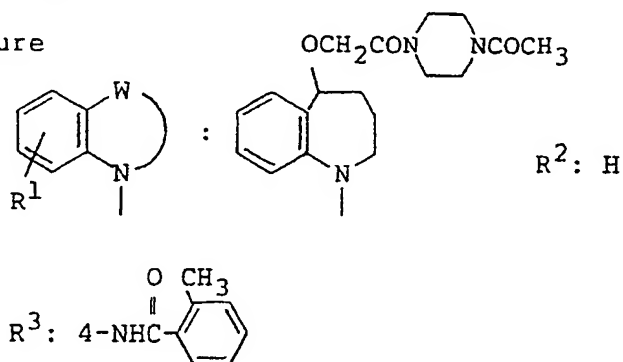
Crystalline form: Colorless amorphous

NMR analysis: 152)

Form: Free

Example 832

Structure



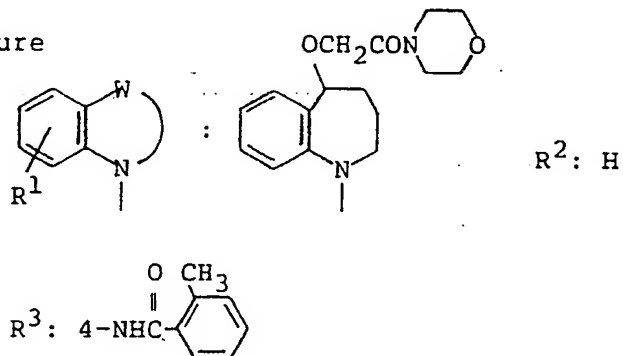
Crystalline form: Colorless amorphous

NMR analysis: 153)

Form: Free

Example 834

Structure



Crystalline form: White powder

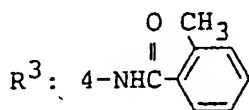
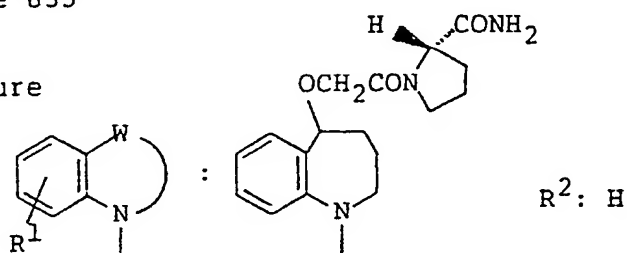
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 247 - 248°C

Form: Free

Example 835

Structure



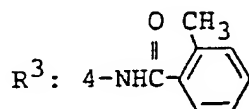
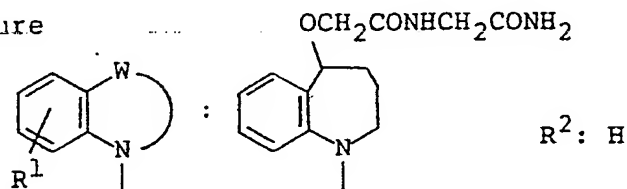
Crystalline form: Colorless amorphous

NMR analysis: 154)

Form: Free

Example 836

Structure



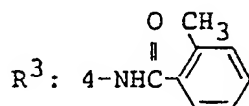
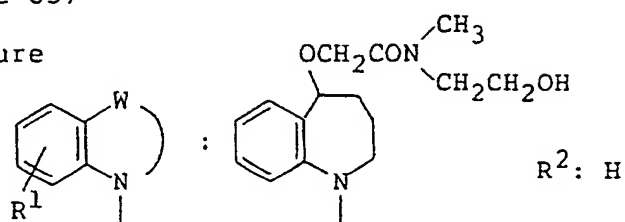
Crystalline form: Colorless amorphous

NMR analysis: 155)

Form: Free

Example 837

Structure



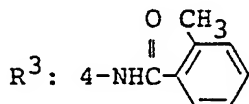
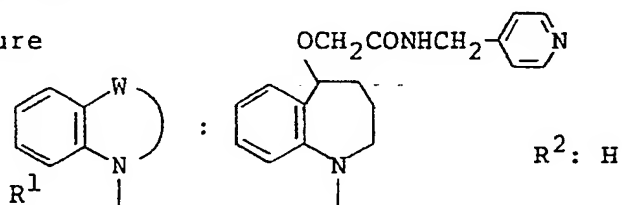
Crystalline form: Colorless amorphous

NMR analysis: 156)

Form: Free

Example 838

Structure



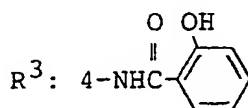
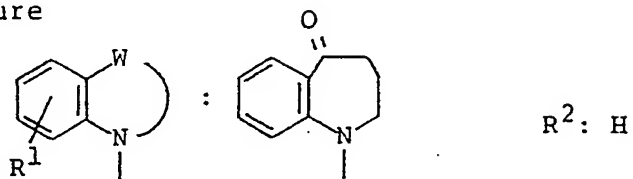
Crystalline form: Colorless amorphous

NMR analysis: 157)

Form: Free

Example 839

Structure



Crystalline form: White powder

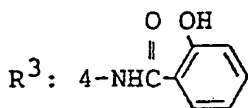
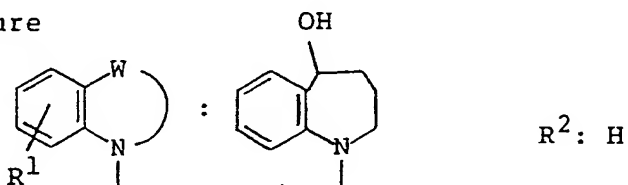
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 234 - 235°C

Form: Free

Example 840

Structure



Crystalline form: White powder

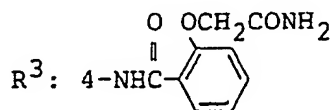
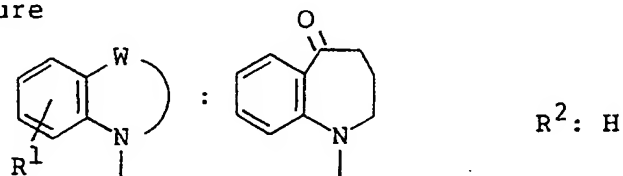
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 234 - 235°C

Form: Free

Example 841

Structure



Crystalline form: White powder

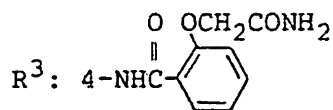
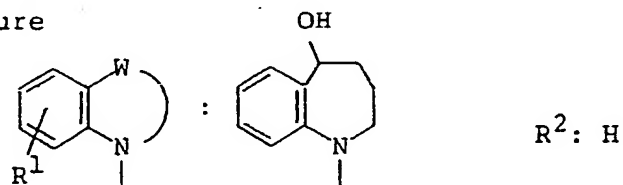
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 226 - 228°C

Form: Free

Example 842

Structure



Crystalline form: White powder

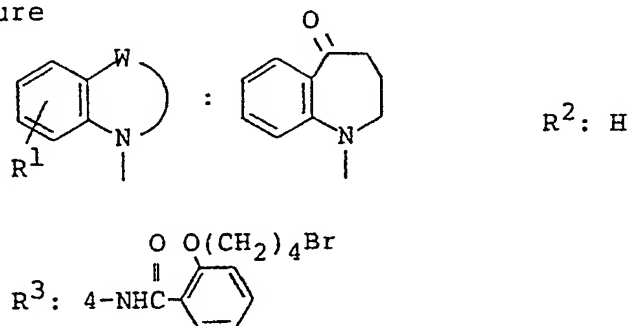
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 230 - 231°C

Form: Free

Example 843

Structure



Crystalline form: White powder

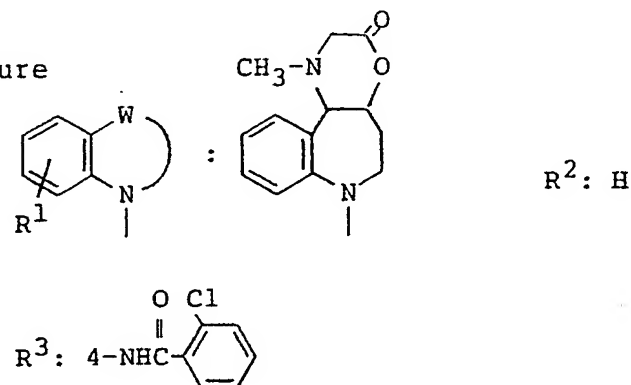
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 186 - 188°C

Form: Free

Example 844

Structure



Crystalline form: Colorless prisms

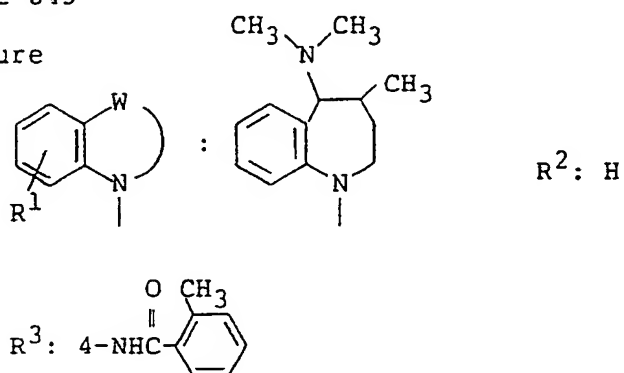
Recrystallization solvent: Chloroform/methanol

Melting Point: 286 - 290°C

Form: Free

Example 845

Structure



Crystalline form: Colorless needles

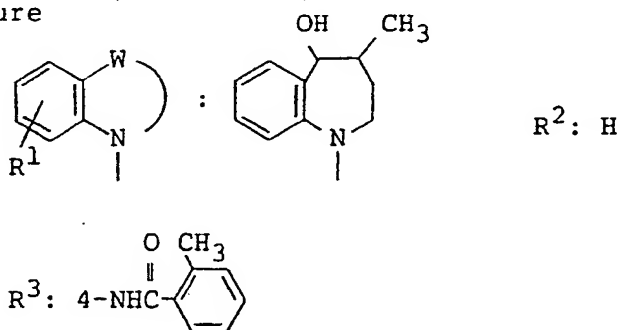
Recrystallization solvent: Ethanol

Melting Point: 186 - 188.5°C

Form: Free

Example 846

Structure



Crystalline form: Colorless prisms

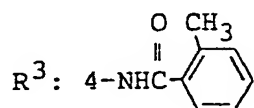
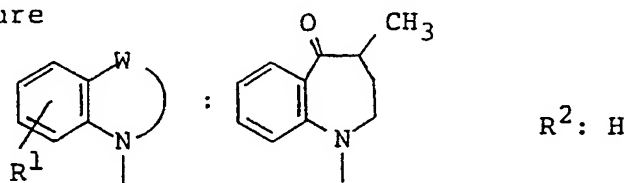
Recrystallization solvent: Ethanol

Melting Point: 220 - 222°C

Form: Free

Example 847

Structure



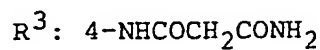
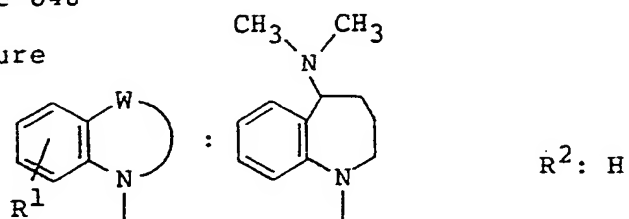
Crystalline form: White powder

NMR analysis: 158)

Form: Free

Example 848

Structure



Crystalline form: Colorless prisms

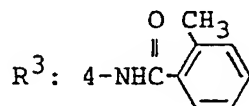
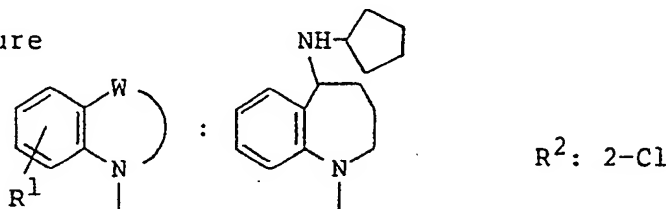
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 189 - 192°C

Form: Free

Example 849

Structure



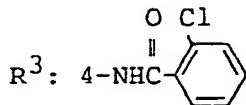
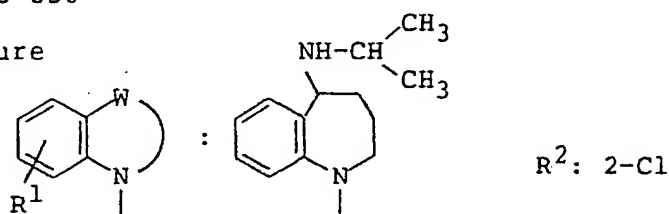
Crystalline form: Colorless amorphous

NMR analysis: 159)

Form: Free

Example 850

Structure



Crystalline form: White powder

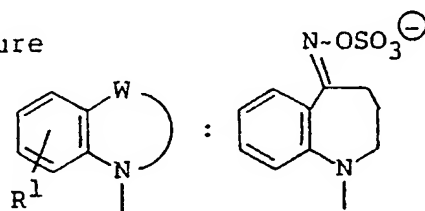
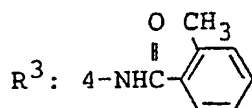
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 207 - 209°C (decomposed)

Form: Free

Example 851

Structure

 R^2 : 2-Cl

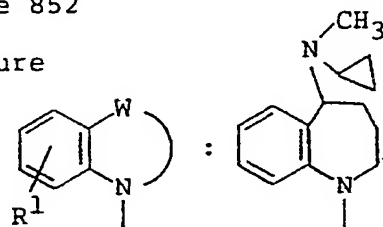
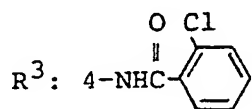
Crystalline form: White powder

NMR analysis: 160)

Form: K^+

Example 852

Structure

 R^2 : 2-Cl

Crystalline form: White powder

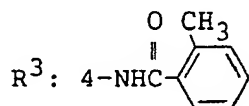
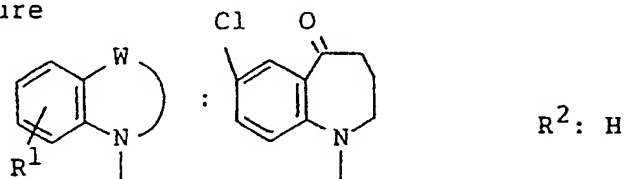
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 193 - 194°C

Form: Free

Example 853

Structure



Crystalline form: White powder

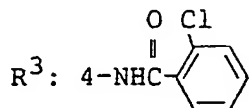
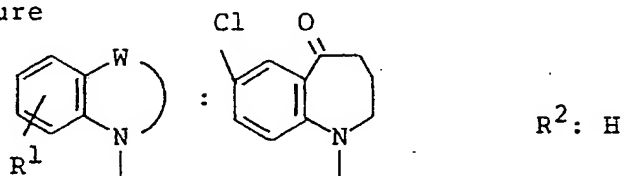
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 185.5 - 186°C

Form: Free

Example 854

Structure



Crystalline form: White powder

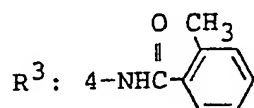
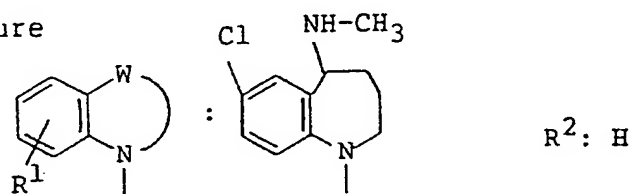
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 223.5 - 226°C (decomposed)

Form: Free

Example 855

Structure



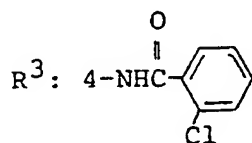
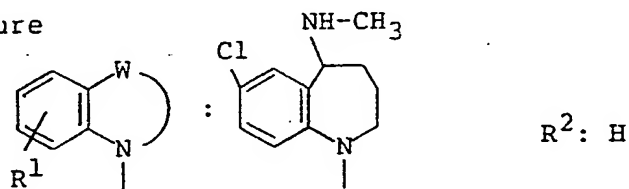
Crystalline form: Colorless amorphous

NMR analysis: 161)

Form: Free

Example 856

Structure



Crystalline form: White powder

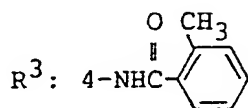
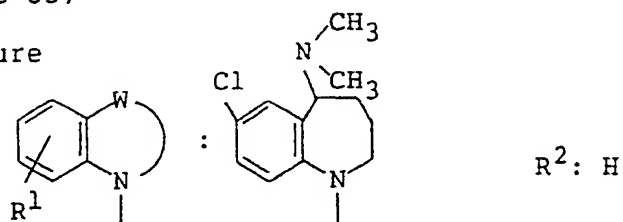
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 225.5 - 227°C

Form: Free

Example 857

Structure



Crystalline form: White powder

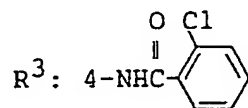
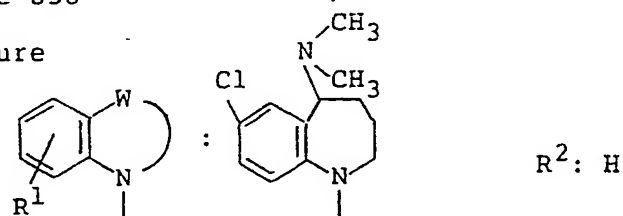
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 212 - 214°C

Form: Free

Example 858

Structure



Crystalline form: White powder

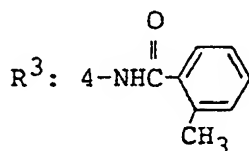
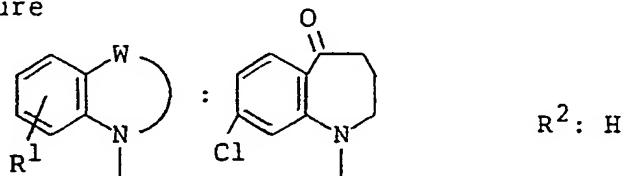
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 230.5 - 233°C

Form: Free

Example 859

Structure



Crystalline form: White powder

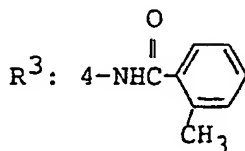
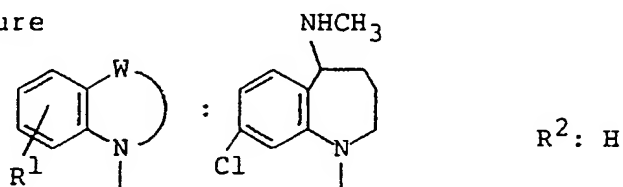
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 212.5 - 215°C (decomposed)

Form: Free

Example 860

Structure



Crystalline form: White powder

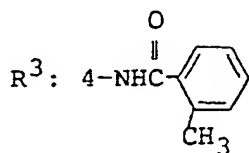
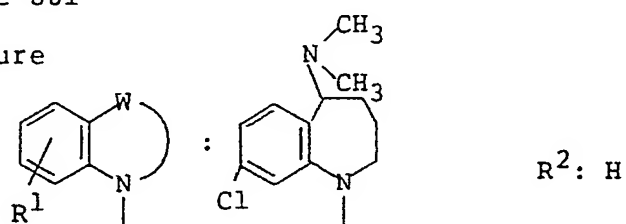
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 192 - 194.5°C

Form: Free

Example 861

Structure



Crystalline form: White powder

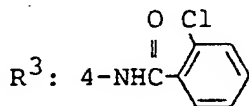
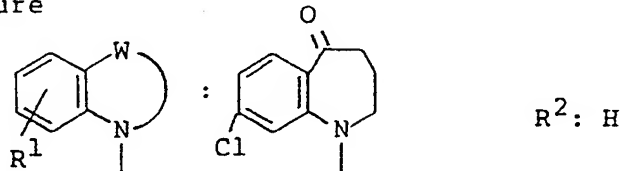
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 175 - 177°C

Form: Free

Example 862

Structure



Crystalline form: White powder

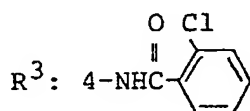
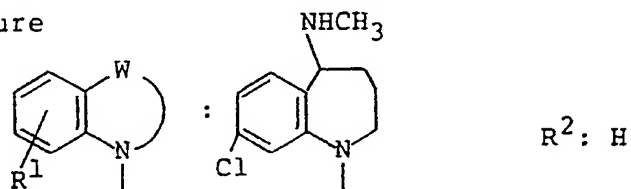
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 208.5 - 209.5°C

Form: Free

Example 863

Structure



Crystalline form: White powder

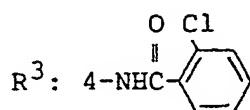
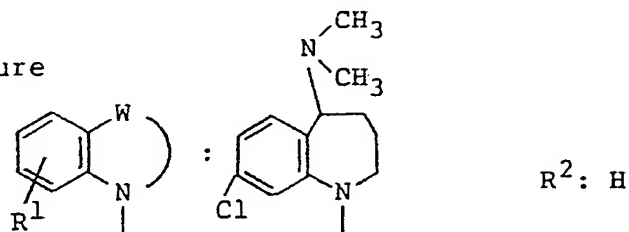
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 191 - 193.5°C

Form: Free

Example 864

Structure



Crystalline form: White powder

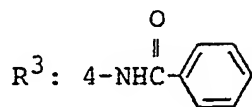
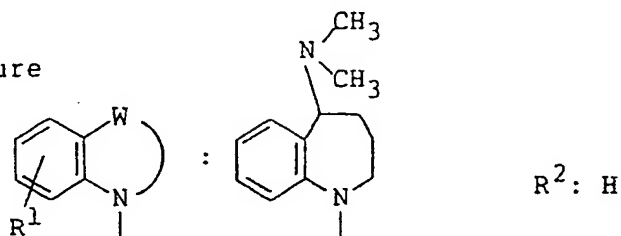
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 204 - 205.5°C

Form: Free

Example 865

Structure



Crystalline form: Light yellow prisms

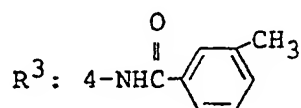
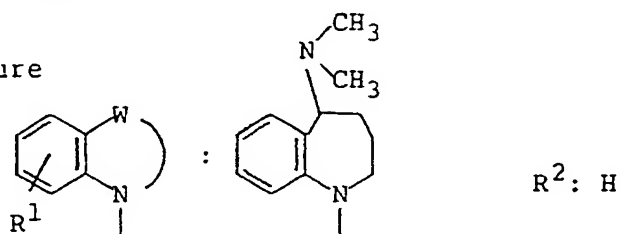
Recrystallization solvent: Ethanol

Melting Point: 221 - 223°C

Form: Free

Example 866

Structure



Crystalline form: Colorless prisms

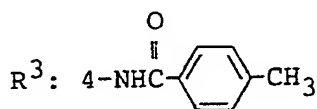
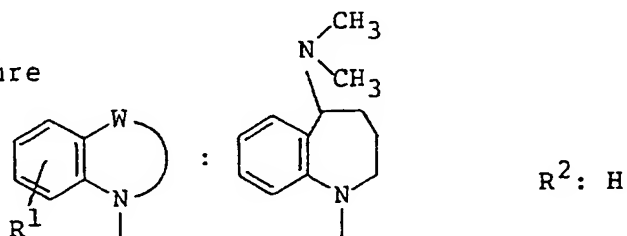
Recrystallization solvent: Ethyl acetate

Melting Point: 171 - 173°C

Form: Free

Example 867

Structure



Crystalline form: Colorless prisms

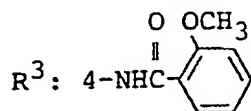
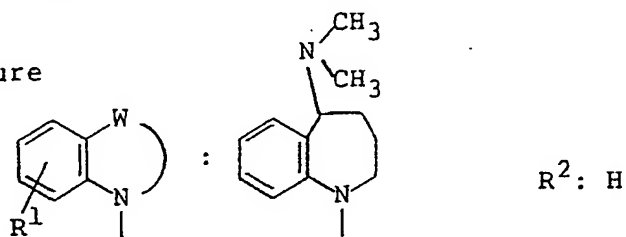
Recrystallization solvent: Ethyl acetate

Melting Point: 185 - 187°C

Form: Free

Example 868

Structure



Crystalline form: Colorless prisms

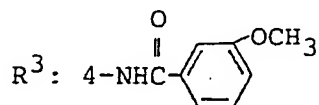
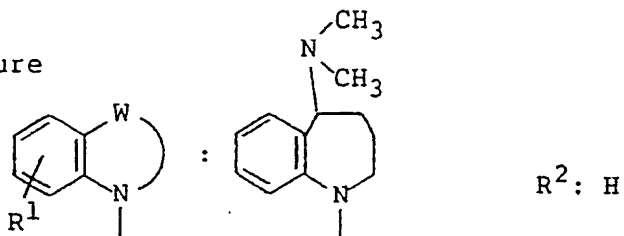
Recrystallization solvent: Ethanol

Melting Point: 190 - 192°C

Form: Free

Example 869

Structure



Crystalline form: Colorless prisms

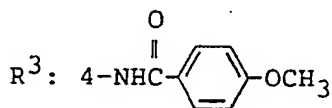
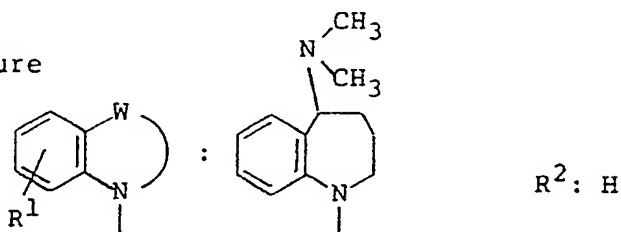
Recrystallization solvent: Ethanol

Melting Point: 175- 177°C

Form: Free

Example 870

Structure



Crystalline form: Colorless powder

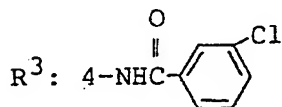
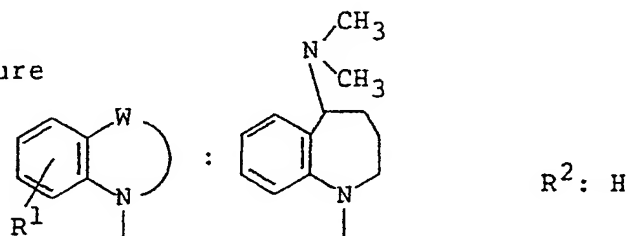
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 148 - 151°C

Form: Free

Example 871

Structure



Crystalline form: Colorless prisms

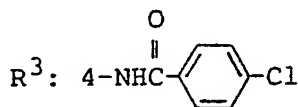
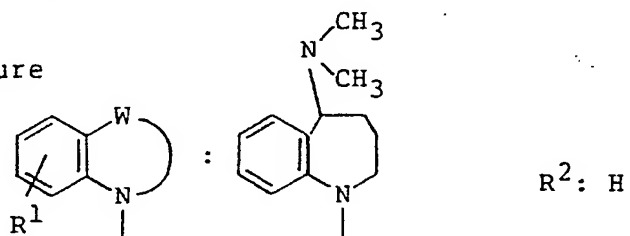
Recrystallization solvent: Ethanol

Melting Point: 200 - 202°C

Form: Free

Example 872

Structure



Crystalline form: Colorless prisms

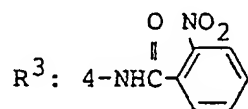
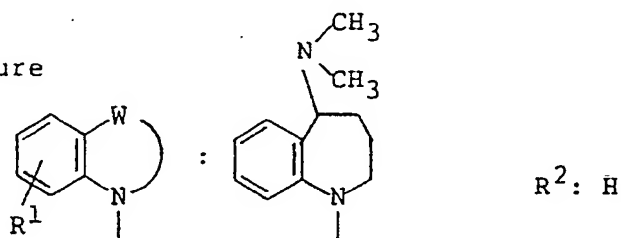
Recrystallization solvent: Ethanol

Melting Point: 200 - 202°C

Form: Free

Example 873

Structure



Crystalline form: Light yellow powder

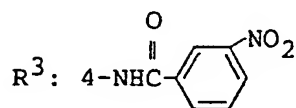
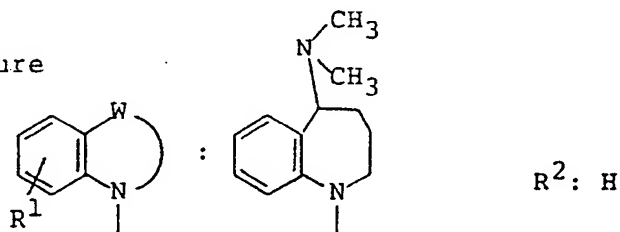
Recrystallization solvent: Acetone

Melting Point: 235 - 238°C

Form: Free

Example 874

Structure



Crystalline form: Light yellow powder

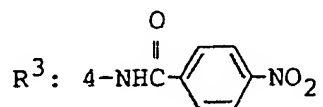
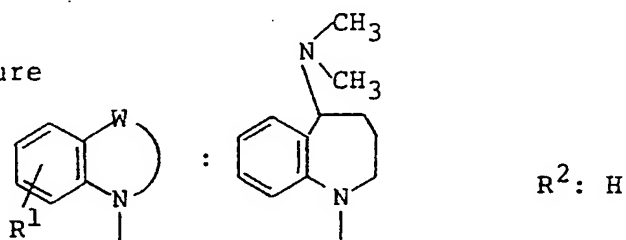
Recrystallization solvent: Acetone

Melting Point: 198 - 201°C

Form: Free

Example 875

Structure



Crystalline form: Light yellow needles

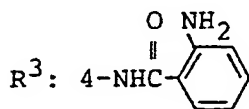
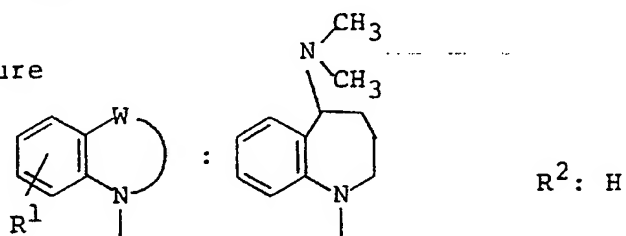
Recrystallization solvent: Chloroform/ethyl acetate

Melting Point: 232 - 237°C

Form: Free

Example 876

Structure



Crystalline form: Colorless prisms

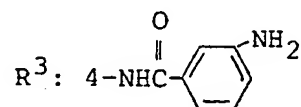
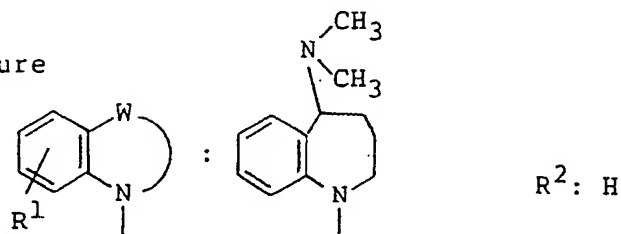
Recrystallization solvent: Chloroform/ethyl acetate

Melting Point: 224 - 227°C

Form: Free

Example 877

Structure



Crystalline form: Colorless prisms

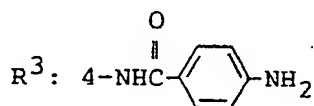
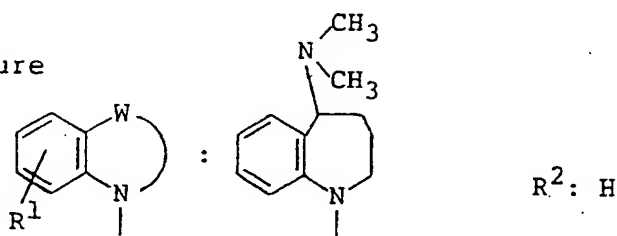
Recrystallization solvent: Ethanol

Melting Point: 211 - 214°C

Form: Free

Example 878

Structure



Crystalline form: Colorless powder

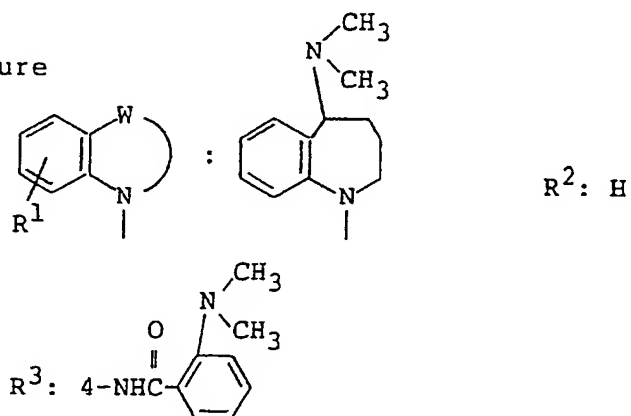
Recrystallization solvent: Dichloromethane/n-hexane

Melting Point: 238 - 243°C

Form: Free

Example 879

Structure



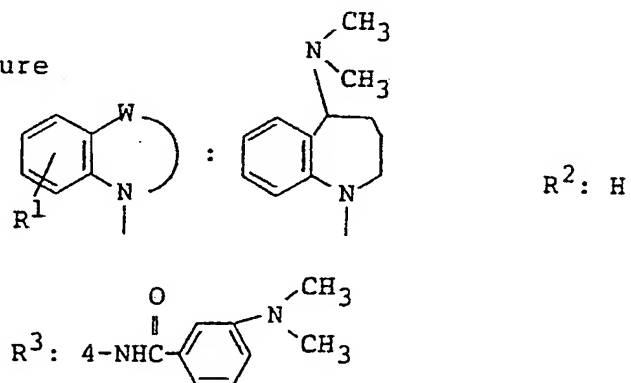
Crystalline form: Colorless amorphous

NMR analysis: 162)

Form: Free

Example 880

Structure



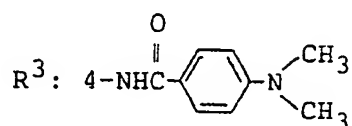
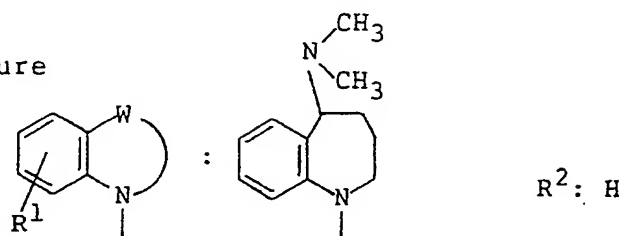
Crystalline form: Colorless amorphous

NMR analysis: 163)

Form: Free

Example 881

Structure



Crystalline form: Colorless prisms

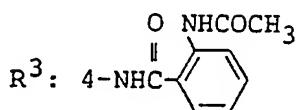
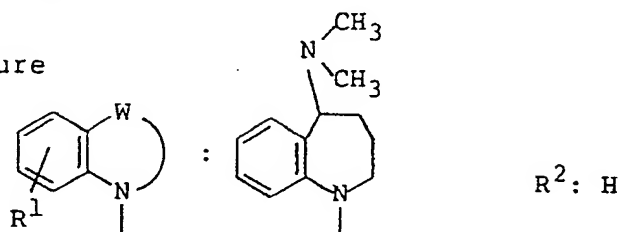
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 198 - 202°C

Form: Free

Example 882

Structure



Crystalline form: Colorless prisms

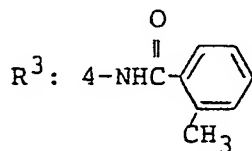
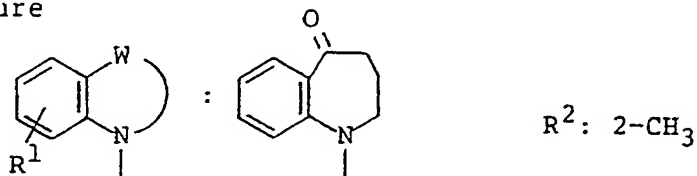
Recrystallization solvent: Chloroform/ethyl acetate

Melting Point: 226 - 229°C

Form: Free

Example 883

Structure



Crystalline form: White powder

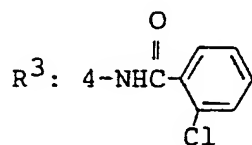
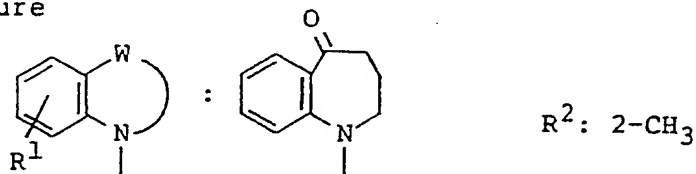
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 139 - 140°C

Form: Free

Example 884

Structure



Crystalline form: White powder

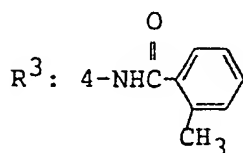
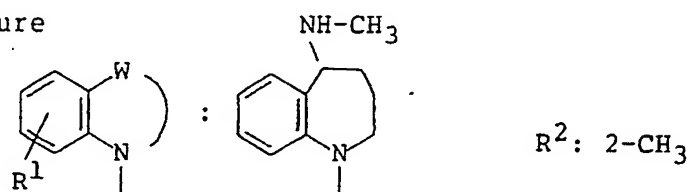
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 149 - 152°C

Form: Free

Example 885

Structure



Crystalline form: White powder

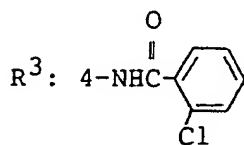
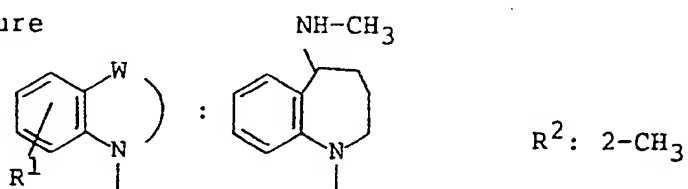
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 180.5 - 182°C

Form: Free

Example 886

Structure

~~Crystalline form: White powder~~

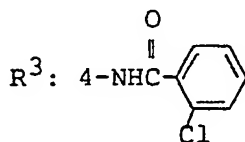
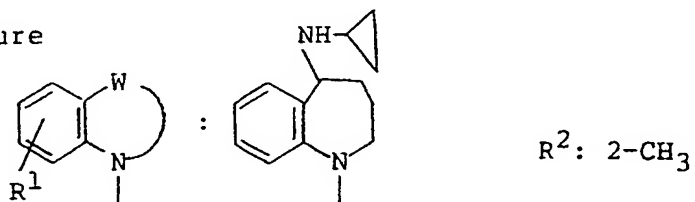
Recrystallization solvent: Chloroform/diethyl ether

Melting Point: 211 - 214°C

Form: Free

Example 887

Structure



Crystalline form: White powder

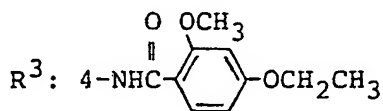
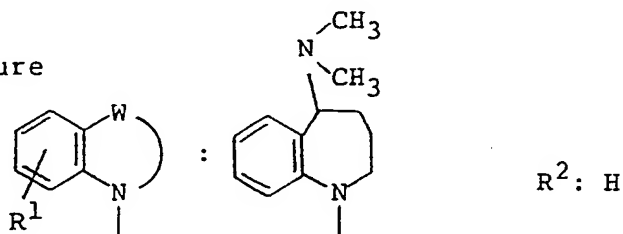
Recrystallization solvent: Chloroform/diethyl ether

Melting Point: 171 - 174.5°C

Form: Free

Example 888

Structure

~~Crystalline form: White powder~~

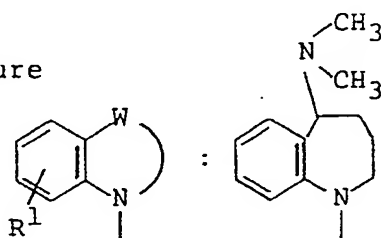
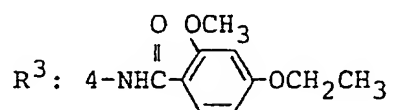
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 203 - 205°C

Form: Free

Example 889

Structure

 $R^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

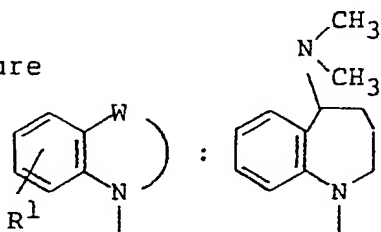
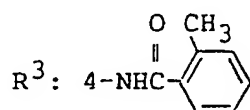
Recrystallization solvent: Ethanol

Melting Point: 202 - 202.5

Form: Free

Example 890

Structure

 $R^2: 3\text{-OCH}_2\text{CONH}_2$ ~~Crystalline form: White powder~~

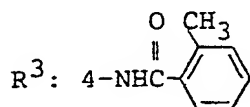
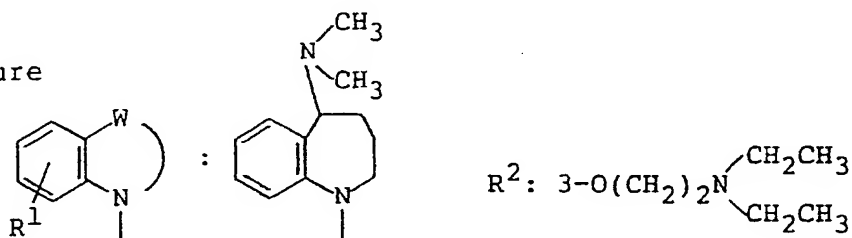
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 130 - 133°C

Form: Free

Example 891

Structure



Crystalline form: White powder

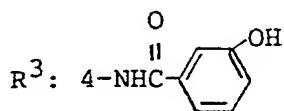
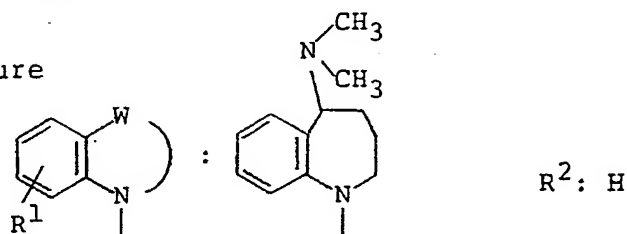
Recrystallization solvent: Methanol/n-hexane

Melting Point: 104.5 - 106°C

Form: Free

Example 892

Structure

Crystalline form: ~~White powder~~

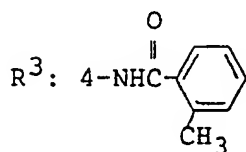
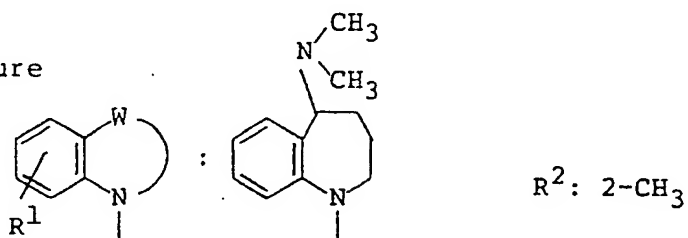
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 197 - 198°C

Form: Free

Example 893

Structure



Crystalline form: White powder

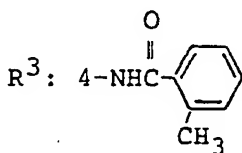
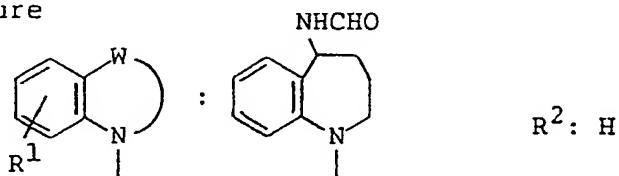
Recrystallization solvent: Dichloromethane/ethyl acetate

Melting Point: 191 - 192°C

Form: Free

Example 894

Structure



Crystalline form: Colorless columnar

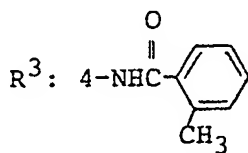
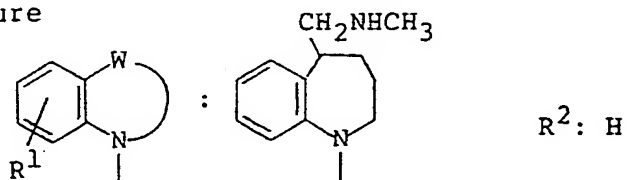
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 211 - 213°C

Form: Free

Example 895

Structure



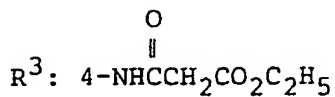
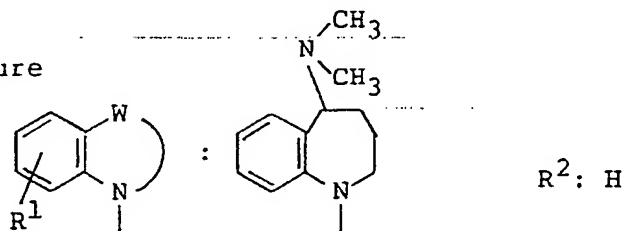
Crystalline form: Colorless amorphous

NMR analysis: 164)

Form: Free

Example 896

Structure



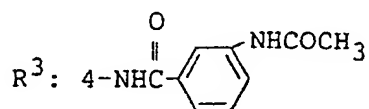
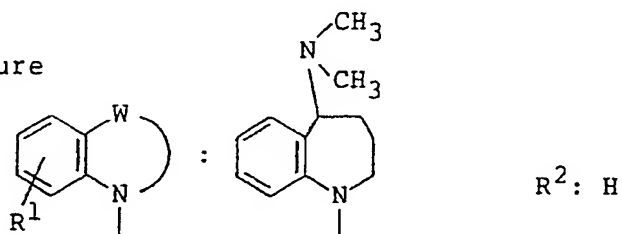
Crystalline form: Colorless amorphous

NMR analysis: 165)

Form: Free

Example 897

Structure



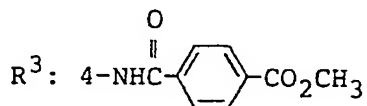
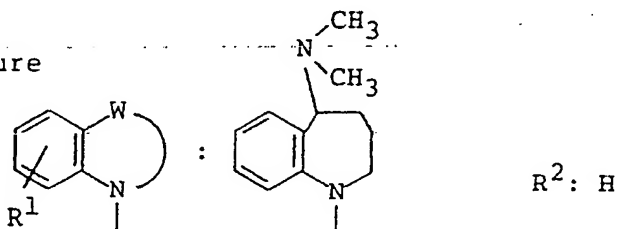
Crystalline form: Colorless amorphous

NMR analysis: 166)

Form: Free

Example 898

Structure



Crystalline form: Colorless prisms

Recrystallization solvent: Ethanol

Melting Point: 224 - 228°C

Form: Free

- 138) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-2.95 (19H, m), 3.05-3.3 (1H, m), 3.85-4.1 (2H, m), 4.3-4.6 (1H, m), 6.64 (1H, d, $J=7.8$ Hz), 6.9-7.8 (12H, m)
- 139) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.1-2.3 (13H, m), 2.65-3.2 (1H, m), 4.55-5.6 (3H, m), 6.55-6.7 (1H, m), 6.9-7.6 (12H, m)
- 140) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-4.15 (19H, m), 4.3-5.0 (1H, m), 6.65 (1H, d, $J=7.7$ Hz), 6.9-8.05 (12H, m)
- 141) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.4-3.0 (9H, m), 3.05-3.6 (3H, m), 3.9-4.1 (1H, m), 4.35-4.55 (1H, m), 4.9-5.65 (1H, m), 6.67 (1H, d, $J=7.4$ Hz), 6.85-7.6 (12H, m), 7.6-7.85 (2H, m)
- 142) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-2.85 (21H, m), 3.2-4.0 (4H, m), 4.3-4.4 (1H, m), 4.45-5.2 (2H, m), 6.61 (1H, d, $J=7.6$ Hz), 6.9-7.65 (12H, m)
- 143) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-3.45 (17H, m), 3.8-5.7 (5H, m), 6.5-7.65 (13H, m)
- 144) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-3.1 (14H, m), 3.3-4.0 (4H, m), 4.15-4.4 (1H, m), 4.45-5.2 (1H, m), 6.64 (1H, d, $J=7.4$ Hz), 6.9-7.7 (12H, m)
- 145) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.9-3.25 (16H, m), 3.9-5.9 (2H, m), 6.65 (1H, d, $J=7.4$ Hz), 6.85-7.5 (11H, m), 7.9-8.3 (1H, m)
- 146) $^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.3-2.15 (4H, m), 2.32 (3H, s), 2.8-3.05 (1H, m), 4.24 (2H, AB-q, $J=12.8$, 15.4 Hz), 4.35-4.55 (1H, m), 4.9-5.25 (1H, m), 6.68 (1H,

- d, J=7.6 Hz), 6.9-7.45 (9H, m), 7.52 (2H, d, J=8.6 Hz), 8.9-9.05 (1H, m), 10.31 (1H, s)
- 147) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.5-2.35 (4H, m), 2.45 (3H, s), 2.6-2.85 (1H, m), 3.32 (3H, s), 4.19 (2H, AB-q, J=12.2 Hz, 15.6 Hz), 5.0-5.2 (1H, m), 5.82 (1H, d, J=10.3 Hz), 6.69 (1H, d, J=7.8 Hz), 6.75-7.95 (12H, m)
- 148) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.2-3.3 (17H, m), 3.45 (2H, AB-q, J=14.7, 22.9 Hz), 3.9-4.35 (2H, m), 6.60 (2H, d, J=7.7 Hz), 6.8-8.0 (11H, m), 8.39 (1H, s)
- 149) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.45-3.40 (8H, m), 2.23 (3H, s), 2.33 (3H, s), 2.46 (3H, s), 4.44-5.23 (1H, m), 6.54-6.78 (1H, m), 6.84-7.94 (12H, m)
- 150) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.50-1.92 (3H, m), 1.92-2.05 (1H, m), 2.47 (3H, s), 2.55-3.06 (5H, m), 3.43-5.76 (8H, m), 6.63-6.82 (1H, m), 6.97-8.08 (12H, m)
- 151) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.43-2.65 (4H, m), 2.48 (3H, s), 2.69-3.25 (5H, m), 3.90-5.40 (8H, m), 6.64-6.94 (1H, m), 6.94-7.77 (12H, m)
- 152) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.50-1.90 (3H, m), 1.90-2.20 (1H, m), 2.20-2.64 (4H, m), 2.32 (3H, s), 2.47 (3H, s), 2.64-3.27 (1H, m), 3.36-3.83 (4H, m), 3.93-4.52 (2H, m), 4.52-5.27 (2H, m), 6.57-6.82 (1H, m), 6.93-7.87 (12H, m)
- 153) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.52-1.93 (2H, m), 1.93-2.23 (4H, m), 2.23-2.57 (1H, m), 2.45 (3H, s), 2.72-3.02 (1H, m), 3.02-3.77 (8H, m), 3.93-4.50 (2H, m),

- 4.50-5.20 (2H, m), 6.60-6.80 (1H, m), 6.94-7.64 (11H, m), 8.16 (1H, brs)
- 154) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.48-2.60 (8H, m), 2.46 (3H, s), 2.65-3.01 (1H, m), 3.20-3.74 (2H, m), 3.80-5.14 (4H, m), 5.30-5.84 (1H, m), 6.51-8.14 (13H, m)
- 155) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.54-1.91 (2H, m), 1.91-2.20 (1H, m), 2.22-2.64 (1H, m), 2.44 (3H, s), 2.70-3.13 (1H, m), 3.60-4.40 (4H, m), 4.50-5.20 (2H, m), 6.07-8.00 (13H, m), 9.93 (1H, s)
- 156) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.56-1.92 (2H, m), 1.92-2.19 (1H, m), 2.19-2.60 (1H, m), 2.46 (3H, s), 2.66-3.26 (4H, m), 3.33-3.95 (4H, m), 4.00-5.20 (4H, m), 6.58-6.82 (1H, m), 6.93-8.21 (12H, m)
- 157) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.57-2.17 (3H, m), 2.21-2.68 (1H, m), 2.47 (3H, s), 2.73-3.04 (1H, m), 3.91-4.42 (4H, m), 4.50-5.17 (2H, m), 6.61-6.99 (2H, m), 6.99-8.10 (14H, m), 8.21-8.71 (2H, m)
- 158) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.31 (3H, d, $J=6.7$ Hz), 1.53-1.90 (1H, m), 2.29-2.58 (1H, m), 2.47 (3H, s), 2.94-3.63 (2H, m), 4.57-5.05 (1H, m), 6.68-6.82 (1H, m), 7.10-7.59 (10H, m), 7.72 (1H, s), 7.78-7.96 (1H, m)
- 159) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.60 (17H, m), 2.65-5.10 (3H, m), 6.85-3.85 (12H, m)
- 160) $^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.40-1.75 (1H, m), 1.90-2.15 (1H, m), 2.33 (3H, s), 2.50-2.80 (2H, m), 3.10-3.50

- (1H, m), 4.40-4.65 (1H, m), 6.85-7.60 (10H, m),
7.85 (1H, s), 10.44 (1H, s)
- 161) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.30-2.70 (11H, m), 3.00-5.20
(3H, m), 6.58 (1H, d, $J=8$ Hz), 6.90-7.05 (1H, m),
7.10-7.70 (10H, m)
- 162) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-2.90 (4H, m), 2.44 (6H, s),
2.79-3.57 (2H, m), 2.79 (6H, s), 4.10-5.25 (1H, m),
6.60-6.80 (1H, m), 6.94-7.60 (10H, m), 8.23 (1H, d,
 $J=6.2$ Hz), 12.41 (1H, m)
- 163) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-3.00 (4H, m), 2.42 (6H, s),
2.99 (6H, s), 3.40-3.65 (2H, m), 4.01-5.15 (1H, m),
6.58-7.59 (12H, m), 7.94 (1H, brs)
- 164) $^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.40-2.18 (4H, m), 2.34 (3H,
s), 2.47 (3H, s), 2.54-3.50 (4H, m), 4.30-5.08 (1H,
m), 6.56-6.82 (1H, m), 6.87-7.48 (10H, m), 7.48-
7.75 (2H, m), 10.35 (1H, s)
- 165) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.08-5.20 [20H, m, 1.30 (3H, t,
 $J=7.2$ Hz), 3.41 (2H, s), 4.22 (2H, q, $J=7.2$ Hz)],
6.49-7.73 (8H, m), 9.25-9.58 (1H, m)
- 166) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.17-2.80 (4H, m), 2.05 (3H, s),
2.42 (6H, s), 3.02-3.53 (2H, m), 4.06-5.15 (1H, m),
6.55-7.80 (12H, m), 8.53-8.74 (2H, m)

Example 899

To a solution of 5-acetyloxyimino-1-[4-(2-chloro-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.48 g) in acetic acid (20 ml) is added platinum oxide

(0.05 g) and the mixture is subjected to catalytic reduction under hydrogen atmosphere. After completion of the reaction, the catalyst is removed by filtration, and the filtrate is concentrated. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1 + 10 : 1), and recrystallized from ethanol/diethyl ether to give 5-amino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.19 g) as colorless prisms, m.p. 176 - 178°C.

Example 900

To a solution of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dichloromethane (10 ml) is added triethylamine (0.24 ml). Subsequently, thereto is added methanesulfonyl chloride (0.14 ml) under ice-cooling, and then, the mixture is warmed to room temperature and stirred overnight. Water is added to the reaction solution, extracted three times with dichloromethane. The extract is washed with saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1), and recrystallized from ethanol to give 5-(N-methyl-N-methanesulfonylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.48 g) as colorless scales, m.p. 197 - 198°C.

Example 901

To a solution of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dichloromethane is added triethylamine (0.24 ml). Subsequently, thereto is added benzoyl chloride (0.2 ml) under ice-cooling, and the temperature thereof is raised to room temperature, and the mixture is stirred overnight. Water is added to the reaction solution and extracted three times with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1), and recrystallized from ethanol to give 5-(N-methyl-N-benzoylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.64 g) as colorless needles, m.p. 248 - 249°C.

Example 902

A mixture of 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) and ethyl formate (10 ml) is refluxed for 4 hours. The reaction solution is concentrated and the resulting residue is recrystallized from ethanol/petroleum ether to give 5-formylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.38 g) as colorless columnar crystal, m.p. 211 - 213°C.

Using the suitable starting materials, the compounds of above Examples 825 and 894 are obtained in the same manner as in above Example 902.

Example 903

To a solution of 5-amino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dichloromethane (10 ml) is added triethylamine (0.22 ml). Subsequently, thereto is added di-tert-butyl dicarbonate (0.34 g) at room temperature and the mixture is stirred for 2 hours. Then, thereto is added additional di-tert-butyl dicarbonate (0.1 g) and the mixture is stirred for 1 hour. The reaction mixture is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; n-hexane : ethyl acetate = 1 : 1) to give 5-tert-butoxycarbonylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.66 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.1-2.3 (13H, m), 2.65-3.2 (1H, m), 4.55-5.6 (3H, m), 6.55-6.7 (1H, m), 6.9-7.6 (12H, m)

Using the suitable starting materials, the compound of above Example 791 is obtained in the same manner as in above Example 903.

Example 904

To a solution of 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dichloromethane (10 ml) is added phenyl isocyanate (0.2 g)

under ice-cooling. The mixture is stirred at the same temperature for 30 minutes, and the temperature thereof is raised to room temperature and then the mixture is stirred overnight. The reaction solution is distilled off and the resulting residue is recrystallized from dioxane to give 5-anilinocarbonylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.65 g) as colorless prisms, m.p. 269 - 271°C.

Using the suitable starting materials, the compound of above Example 795 is obtained in the same manner as in above Example 904.

Example 905

To a solution of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in methanol (10 ml) is added glycolonitrile (50 %, 0.19 ml) and the mixture is stirred at room temperature for 20 minutes, and then refluxed for 30 minutes. Thereto is added additional glycolonitrile (0.5 ml) and the mixture is refluxed for 5.5 hours. The reaction solution is concentrated and to the resulting residue is added ethyl acetate. The precipitated crystal is collected by filtration, and recrystallized from acetonitrile to give 5-(N-methyl-N-cyanomethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.32 g) as colorless needles, m.p. 227 - 228°C.

Example 906

To 5-(N-methyl-N-oxiranylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.62 g) is added trifluoroacetic acid (1.22 ml) under ice-cooling and the mixture is stirred for 4 hours. The reaction solution is neutralized with aqueous sodium carbonate solution, and extracted three times with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is dissolved in methanol (10 ml). Thereto is added 40 % aqueous sodium hydroxide solution (10 ml) and water (10 ml), and the mixture is stirred at room temperature overnight. Methanol is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1) to give 5-[N-methyl-N-(2,3-dihydroxypropyl)amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.23 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-4.15 (19H, m), 4.3-5.0 (1H, m), 6.65 (1H, d, $J=7.7$ Hz), 6.9-8.05 (12H, m)

Example 907

A mixture of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.64 g), acetonitrile (20 ml), potassium carbonate (0.6 g) and ethyl bromoacetate (0.44 ml) is refluxed for 3 hours. The reaction solution is concentrated and water is added to the

resulting residue, and the mixture is extracted three times with dichloromethane. The extract is washed with saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1), and recrystallized from ethyl acetate/petroleum ether to give 5-(N-methyl-N-ethoxycarbonylmethylamino)-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.82 g) as colorless prisms, m.p. 167 - 168°C.

Using the suitable starting materials, the compounds of above Examples 785, 787, 799, 800, 802 - 806, 808, 811, 819, 824, 826, 827, 845, 848, 849, 850, 852, 855 - 858, 860, 861, 863 - 882, 885 - 893 and 895 - 898 are obtained in the same manner as in above Example 907.

Example 908

5-(N-Methyl-N-ethoxycarbonylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) is dissolved in saturated solution of ammonia in methanol (20 ml), and the mixture is heated at 100°C for 8 hours in a sealed tube. The reaction solution is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1) to give 5-(N-methyl-N-carbamoylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.4 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.4-3.0 (9H, m), 3.05-3.6 (3H, m), 3.9-4.1 (1H, m), 4.35-4.55 (1H, m), 4.9-5.65 (1H, m), 6.67 (1H, d, $J=7.4$ Hz), 6.85-7.6 (12H, m), 7.6-7.85 (2H, m)

Example 909

To a solution of 5-(N-methyl-N-ethoxycarbonyl-methylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dioxane (10 ml) is added aqueous solution (1 ml) of sodium hydroxide (0.07 g) and the mixture is stirred at room temperature for 2 days. The reaction solution is concentrated and to the resulting residue is added water. The insoluble materials are removed by filtration. The filtrate is neutralized with 10 % hydrochloric acid and extracted three times with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and to the resulting residue is added a solution of potassium ethylhexanoate (0.2 g) in dichloromethane (20 ml). The solvent is distilled off, and diethyl ether is added to the resulting residue. The precipitated crystal is collected by filtration, and recrystallized from diethyl ether to give potassium 2-[N-methyl-N-{1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepin-5-yl}amino]acetate (0.6 g) as colorless needles, m.p. 164 - 171°C.

Example 910

To a solution of 5-methylamino-1-[4-(2-methyl-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.5 g) in dimethylformamide (20 ml) are added potassium carbonate (0.6 g), potassium iodide (0.72 g) and 2-(3-bromopropoxy)-3,4,5,6-tetrahydro-2H-pyran (0.97 g) and the mixture is stirred at room temperature overnight. The reaction solution is concentrated and to the resulting residue is added water. The mixture is extracted three times with dichloromethane. The extract is washed with saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane + dichloromethane : methanol = 50 : 1) to give 5-{N-methyl-N-[3-(3,4,5,6-tetrahydro-2H-pyran-2-yloxy)propyl]amino}-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.3 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) ; 1.3-2.85 (21H, m), 3.2-4.0 (4H, m), 4.3-4.4 (1H, m), 4.45-5.2 (2H, m), 6.61 (1H, d, $J=7.6$ Hz), 6.9-7.65 (12H, m)

Example 911

To 5-{N-methyl-N-[3-(3,4,5,6-tetrahydro-2H-pyran-2-yloxy)propyl]amino}-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.4 g) is added a mixture of acetyl chloride (0.5 ml) and acetic acid (5 ml) at room temperature, and the mixture is stirred overnight. The reaction solution is concentrated and the resulting residue

is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1), and further purified again by silica gel column chromatography (eluent; n-hexane : ethyl acetate = 1 : 2) to give 5-[N-methyl-N-(3-acetyloxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.06 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.3-3.45 (17H, m), 3.8-5.7 (5H, m), 6.5-7.65 (13H, m)

Example 912

To a solution of 5-[N-methyl-N-[3-(3,4,5,6-tetrahydro-2H-pyran-2-yloxy)propyl]amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.55 g) in ethanol (10 ml) is added pyridinium p-toluenesulfonate (0.03 g) and the mixture is heated at 60°C overnight. After the mixture is refluxed for more 2 hours, water and pyridinium p-toluenesulfonate (0.03 g) are added thereto. The mixture is refluxed for 4 hours. The reaction solution is concentrated and to the resulting residue is added dichloromethane. The mixture is basified with aqueous sodium hydrogen carbonate solution and extracted three times with dichloromethane. The extract is washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1) to give 5-[N-methyl-N-

(3-hydroxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.26 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-3.1 (14H, m), 3.3-4.0 (4H, m), 4.15-4.4 (1H, m), 4.45-5.2 (1H, m), 6.64 (1H, d, $J=7.4$ Hz), 6.9-7.7 (12H, m)

Example 913

To a solution of 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in acetic acid (10 ml) is added dropwise 2,5-dimethoxytetrahydrofuran (0.19 ml), and the mixture is refluxed for 1 hour. The reaction solution is concentrated and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from ethyl acetate/n-hexane to give 5-(1-pyrrolyl)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.31 g) as colorless prisms, m.p. 208 - 210°C.

Example 914

To a solution of 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (2.5 g) in dichloromethane (30 ml) is added triethylamine (0.96 ml) and further thereto is added dropwise chloroacetyl chloride (0.55 ml) under ice-cooling. The mixture is stirred for 5 minutes. The reaction solution is concentrated and to the resulting residue is added water. The precipitated crystal

is collected by filtration, washed with water, and dried to give 5-(2-chloroacetyl-amino)-1-[4-(2-methylbenzoyl-amino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.4 g) as white powder.

$^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.3-2.15 (4H, m), 2.32 (3H, s), 2.8-3.05 (1H, m), 4.24 (2H, AB-q, $J=12.8, 15.4$ Hz), 4.35-4.55 (1H, m), 4.9-5.25 (1H, m), 6.68 (1H, d, $J=7.6$ Hz), 6.9-7.45 (9H, m), 7.52 (2H, d, $J=8.6$ Hz), 8.9-9.05 (1H, m), 10.31 (1H, s)

Using the suitable starting materials, the compound of above Example 814 is obtained in the same manner as in above Example 914.

Example 915

A mixed solution of 5-(2-chloroacetyl-amino)-1-[4-(2-methylbenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g), imidazole (0.1 g) and potassium carbonate (0.19 g) in acetonitrile (30 ml) is refluxed for 8 hours. The reaction solution is concentrated and the resulting residue is washed with water and separated by decantation. The remainder is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 20 : 1 + 15 : 1), and recrystallized from ethanol/n-hexane to give 5-[2-(1-imidazolyl)acetyl-amino]-1-[4-(2-methylbenzoyl-amino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.15 g) as colorless needles, m.p. 250 - 252°C.

Using the suitable starting materials, the compound

of above Example 818 is obtained in the same manner as in above Example 915.

Example 916

To a solution of 5-(2-chloroacetyl-amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g) in dimethylformamide (20 ml) are added dimethylamine hydrochloride (0.21 g) and potassium carbonate (0.54 g), and the mixture is stirred at room temperature for 2 days. The reaction solution is concentrated and water is added to the resulting residue. The precipitated crystal is collected by filtration, and recrystallized from ethyl acetate to give 5-(2-dimethylaminoacetyl-amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.24 g) as colorless prisms, m.p. 214 - 216°C.

Using the suitable starting materials, the compounds of above Examples 816, 817, 820, 821, 826 and 827 are obtained in the same manner as above Example 916.

Example 917

A mixture of 5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.6 g), N,N-dimethyl-2-chloroacetamide (0.19 g) and potassium carbonate (0.22 g) is refluxed for 24 hours. The reaction solution is concentrated and water is added to the resulting residue. The mixture is extracted three times with dichloromethane. The extract is washed with saturated

saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 30 : 1) to give 5-[N-methyl-N-(dimethylaminocarbonylmethyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.05 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.2-3.3 (17H, m), 3.45 (2H, AB-q, $J=14.7, 22.9$ Hz), 3.9-4.35 (2H, m), 6.60 (1H, d, $J=7.7$ Hz), 5.8-8.0 (11H, m), 8.39 (1H, s)

Example 918

To a solution of t-butoxycarbonylglycine (0.84 g) in dimethylformamide (20 ml) are added diethyl cyanophosphate (0.73 ml) and 5-amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.74 g), and further thereto is added triethylamine (1.8 ml) under ice-cooling. The mixture is stirred for 30 minutes, and then stirred at room temperature overnight. The reaction solution is concentrated and water is added to the resulting residue. The precipitated crystal is collected by filtration, washed with water, and recrystallized from ethyl acetate to give 5-(2-aminoacetyl-amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (E) (0.16 g). Separately, the filtrate is concentrated and purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized

from diethyl ether to give 5-[2-(t-butoxycarbonylamino)-acetylamino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (F) (0.19 g).

(E): Colorless prisms, m.p. 287 - 289°C

(F): Colorless prisms, m.p. 170 - 171°C

Example 919

5-Oxo-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.50 g) is suspended in tetrahydrofuran (20 ml), and thereto is added dropwise a 3.0 M solution of methyl magnesium bromide in diethyl ether (1.5 ml) at room temperature. The mixture is stirred at room temperature for 1 hour. The reaction solution is poured into ice-water (20 ml), and extracted with ethyl acetate. The extract is dried over magnesium sulfate, and the solvent is distilled off. The resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 2 : 3 + 1 : 1), and recrystallized from ethyl acetate/n-hexane to give 5-methyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.23 g) as white powder, m.p. 204 - 205°C.

Example 920

To a solution of 5-carboxymethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.50 g) in dimethylformamide (60 ml) are added successively thiomorpholine (0.66 ml), diethyl cyanophosphate (0.89 g) and triethylamine (1.37 ml) with stirring under ice-

cooling. The mixture is stirred for 30 minutes under ice-cooling, and at room temperature for 20 minutes. Water (60 ml) is added to the reaction solution, and extracted with dichloromethane. The extract is dried over magnesium sulfate, and the solvent is distilled off. The resulting residue is purified by silica gel column chromatography (eluent; ethyl acetate : n-hexane = 5 : 2 + 3 : 1), and recrystallized from ethyl acetate/n-hexane to give 5-(thiomorpholinocarbonylmethoxy)-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1.60 g) as white powder, m.p. 235 - 237°C.

Using the suitable starting materials, the compounds of above Examples 829 - 838 are obtained in the same manner as in above Example 920.

Example 921

To a solution of 5-(thiomorpholinocarbonylmethoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.40 g) in dichloromethane (40 ml) is added 80 % m-chloroperbenzoic acid (175 mg) with stirring at -8°C, and the mixture is stirred at -8°C for 1 hour. To the reaction solution is added 20 % aqueous sodium hydrogensulfite solution (40 ml) and the mixture is stirred at room temperature for 30 minutes. The dichloromethane layer is collected, washed with saturated saline solution and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is purified by silica gel

column chromatography (eluent; dichloromethane : methanol = 20 : 1) to give 5-[(1-oxothiomorpholino)carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.32 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.50-1.92 (3H, m), 1.92-2.05 (1H, m), 2.47 (3H, s), 2.55-3.06 (5H, m), 3.43-5.76 (8H, m), 6.63-6.82 (1H, m), 6.97-8.08 (12H, m)

Example 922

To a solution of 5-(thiomorpholinocarbonylmethoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.40 g) in dichloromethane (40 ml) is added 80 % m-chloroperbenzoic acid (0.35 g), and the mixture is stirred at room temperature for 1 hour. The reaction solution is washed successively with an aqueous sodium hydrogensulfite solution and saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off to give 5-[(1,1-dioxothiomorpholino)carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.41 g) as colorless amorphous.

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.43-2.65 (4H, m), 2.48 (3H, s), 2.69-3.25 (5H, m), 3.90-5.40 (8H, m), 6.64-6.94 (1H, m), 6.94-7.77 (12H, m)

Example 923

To a solution of 5-oxo-1-[4-(2-hydroxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (400 mg) in acetone (20 ml) are added potassium carbonate (210 mg), potassium

iodide (250 mg) and 2-chloroacetamide (120 mg), and the mixture is refluxed for 2 hours. The insoluble materials are removed by filtration, and the filtrate is distilled off. Dichloromethane is added to the resulting residue, and the mixture is washed with saturated saline solution, and dried over magnesium sulfate. The solvent is distilled off and the resulting residue is recrystallized from ethyl acetate/n-hexane to give 5-oxo-1-[4-(2-carbamoylmethoxy-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (436 mg) as white powder, m.p. 226 - 228°C.

Using the suitable starting materials, the compound of above Example 842 is obtained in the same manner as above Example 923.

Example 924

A mixture of 5-methylamino-4-hydroxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.13 g), ethyl α -bromoacetate (58 mg), diisopropylethylamine (49 mg) and acetonitrile (5 ml) is refluxed for 10 hours. Acetonitrile is distilled off under reduced pressure, and the resulting residue is dissolved in dichloromethane, washed with water, dried over magnesium sulfate, and distilled off under reduced pressure. The resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol = 50 : 1), and recrystallized from chloroform/methanol to give 7-[4-(2-chlorobenzoylamino)benzoyl]-1-methyl-1,2,3,4a,5,6,7,11b-

octahydro-3-oxo[1]benzazepino[4,5-b][1,4]oxazine (80 mg) as colorless prisms, m.p. 286 - 290°C.

Example 925

To a solution of 5-oxo-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (1 g) in methanol (20 ml) and dichloromethane (20 ml) is added hydroxylamine-O-sulfonic acid (0.28 g) with stirring at room temperature, and the mixture is stirred at the same temperature for 1 hour. Subsequently, to the reaction solution is added with stirring an aqueous solution of potassium carbonate (0.34 g) in water (1 ml) at room temperature, and the mixture is stirred at the same temperature for 2 hours. The precipitated crystal is removed by filtration, and the filtrate is concentrated under reduced pressure. The resulting residue is purified by silica gel column chromatography to give potassium {1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepin-5-yl}imino-O-sulfonate (0.4 g) as white powder.

$^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.40-1.75 (1H, m), 1.90-2.15 (1H, m), 2.33 (3H, s), 2.50-2.80 (2H, m), 3.10-3.50 (1H, m), 4.40-4.65 (1H, m), 6.85-7.60 (10H, m), 7.85 (1H, s), 10.44 (1H, s)

Example 926

Using the suitable starting materials, the compounds of above Examples 841 - 843, 868 - 870, 888 and

889 are obtained in the same manner as in above Example 380.

Example 927

Using the suitable starting materials, the compounds of above Examples 876 - 878 are obtained in the same manner as in above Example 381.

Example 928

Using the suitable starting materials, the compounds of above Examples 840, 842 and 846 are obtained in the same manner as in above Example 384.

Example 929

Using the suitable starting materials, the compounds of above Examples 788 - 790, 796 - 804, 805, 808, 811, 814, 818, 819, 824, 826, 827, 837, 845, 848, 850, 852, 855, 856 - 858, 860, 861, 863 - 882, 885, 886, 888 - 893 and 895 - 898 are obtained in the same manner as in above Example 388.

Example 930

Using the suitable starting materials, the compound of above Example 848 is obtained in the same manner as in above Example 393.

Example 931

Using the suitable starting materials, the compounds of above Examples 841 and 842 are obtained in the same manner as in above Example 402.

Example 932

Using the suitable starting materials, the

compounds of above Examples 882 and 897 are obtained in the same manner as in above Example 403.

Example 933

Using the suitable starting materials, the compound of above Example 809 is obtained in the same manner as in above Example 634.

Example 934

Using the suitable starting materials, the compounds of above Examples 828 - 838 are obtained in the same manner as in above Example 640.

Example 935

Using the suitable starting materials, the compound of above Example 810 is obtained in the same manner as in above Example 772.

Example 936

Using the suitable starting materials, the compound of above Example 788 is obtained in the same manner as in above Example 771.

Example 937

Using the suitable starting materials, the compounds of above Examples 785, 787, 788 - 790, 796 - 805, 806, 807, 808, 811, 814, 818, 819, 845, 848, 849, 850, 852, 855, 856 - 858, 860, 861, 863 - 882, 885, 886, 888 - 893 and 896 - 898 are obtained in the same manner as in above Example 390.

Example 938

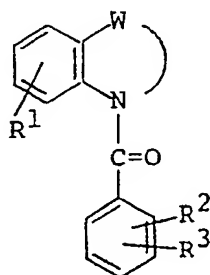
To 5-methanesulfonyloxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.50 g) is added a 30 % solution of methylamine in methanol (50 ml), and the mixture is heated at 100°C for 3 hours in a sealed tube. After cooling, the reaction solution is evaporated under reduced pressure, and the resulting residue is purified by silica gel column chromatography (eluent; dichloromethane : methanol : aqueous ammonia = 100 : 10 : 1) to give 5-methylaminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.07 g).

$^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.40-2.18 (4H, m), 2.34 (3H, s), 2.47 (3H, s), 2.54-3.50 (4H, m), 4.30-5.08 (1H, m), 6.56-6.82 (1H, m), 6.87-7.48 (10H, m), 7.48-7.75 (2H, m), 10.35 (1H, s)

Using the suitable starting materials, the compounds of above Examples 823 - 825 are obtained in the same manner as in above Example 938.

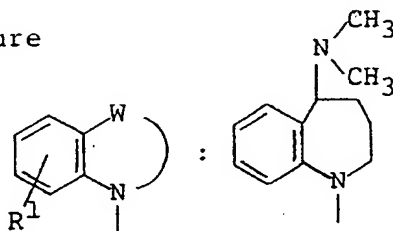
Using the above suitable starting materials, the compounds of the following Table 6 are obtained in the same manner as in Examples 1 and 382.

Table 6

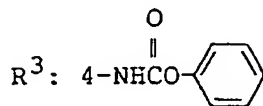


Example 939

Structure



R²: H



Crystalline form: White powder

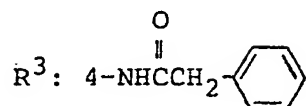
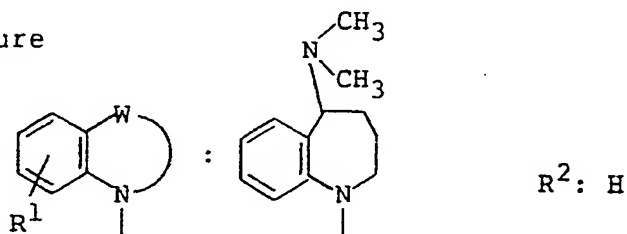
Recrystallization solvent: Ethanol

Melting Point: 208 - 211°C

Form: Free

Example 940

Structure



Crystalline form: White powder

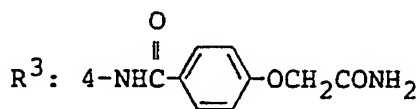
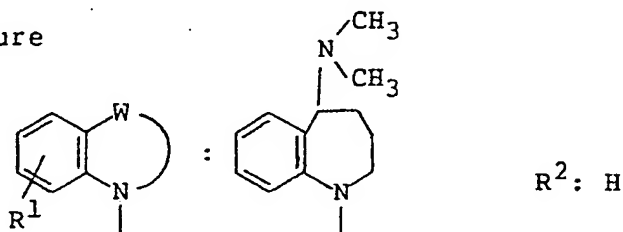
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 171.5 - 172.5°C

Form: Free

Example 941

Structure



Crystalline form: White powder

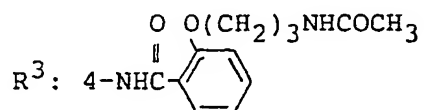
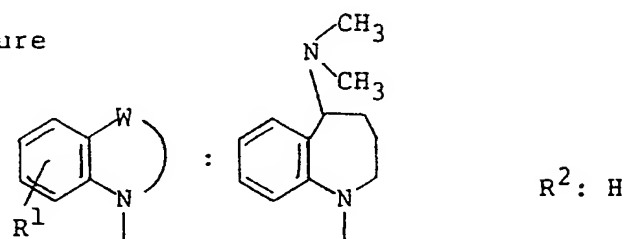
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 151 - 154°C

Form: Free

Example 942

Structure



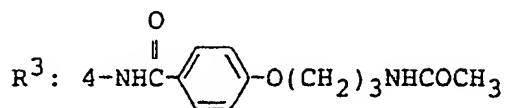
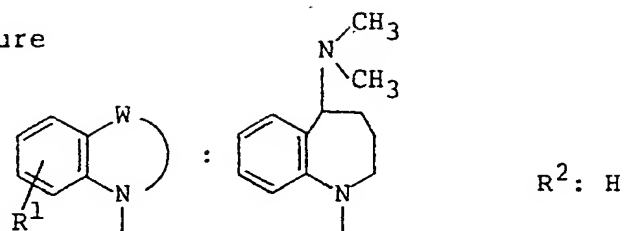
Crystalline form: Colorless amorphous

NMR analysis: 167)

Form: Free

Example 943

Structure



Crystalline form: White powder

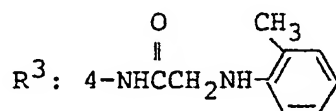
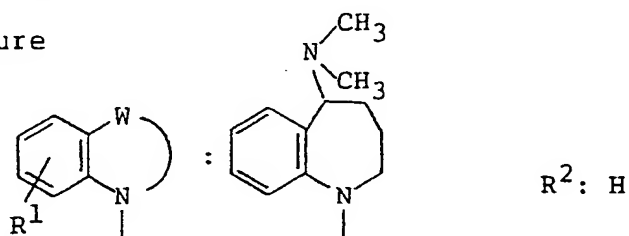
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 180 - 183°C

Form: Free

Example 944

Structure



Crystalline form: White powder

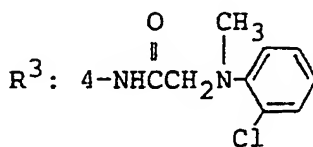
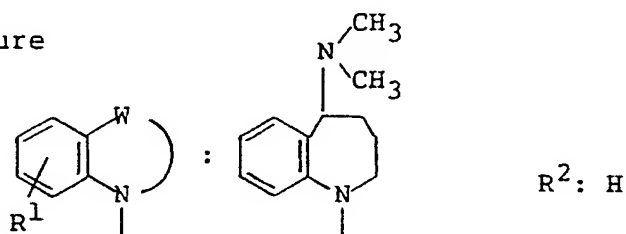
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 109 - 110°C

Form: Free

Example 945

Structure



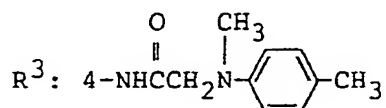
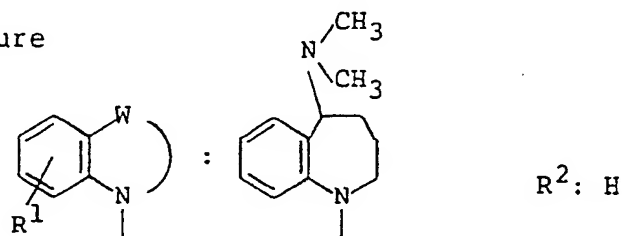
Crystalline form: Colorless oil

NMR analysis: 168)

Form: Free

Example 946

Structure



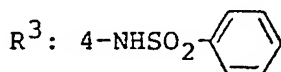
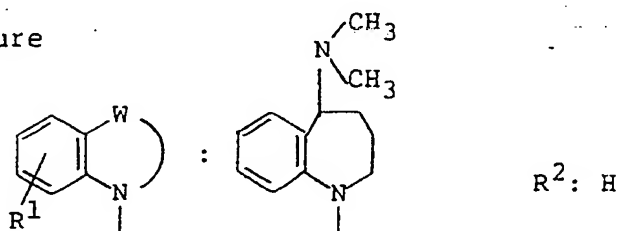
Crystalline form: Colorless oil

NMR analysis: 169)

Form: Free

Example 947

Structure



Crystalline form: White powder

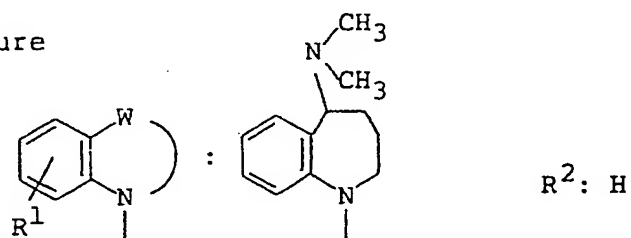
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 177 - 178.5°C

Form: Free

Example 948

Structure



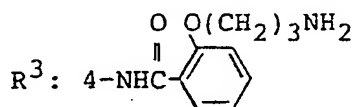
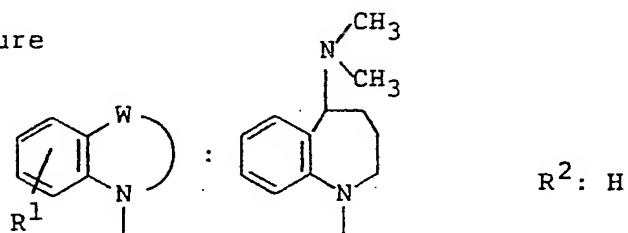
Crystalline form: Colorless amorphous

NMR analysis: 170)

Form: Free

Example 949

Structure



Crystalline form: White powder

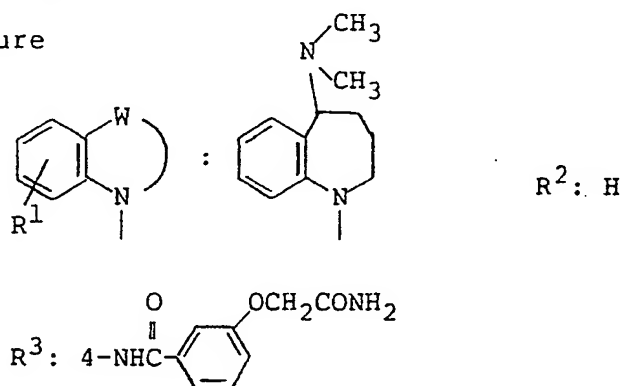
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 162 - 165°C

Form: Free

Example 950

Structure



Crystalline form: White powder

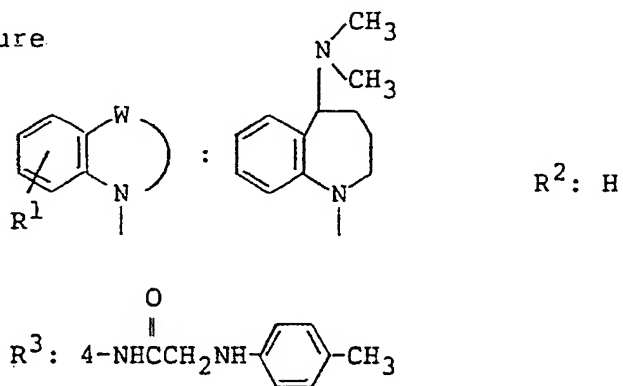
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 212 - 215°C

Form: Free

Example 951

Structure



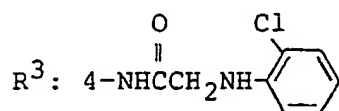
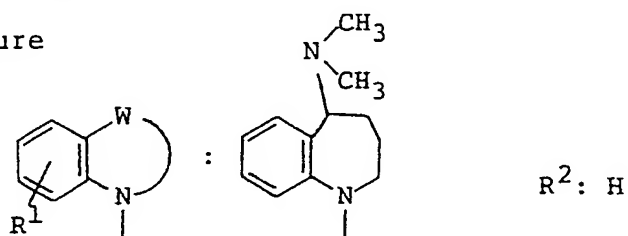
Crystalline form: Colorless oil

NMR analysis: 171)

Form: Free

Example 952

Structure



Crystalline form: White powder

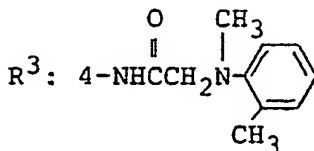
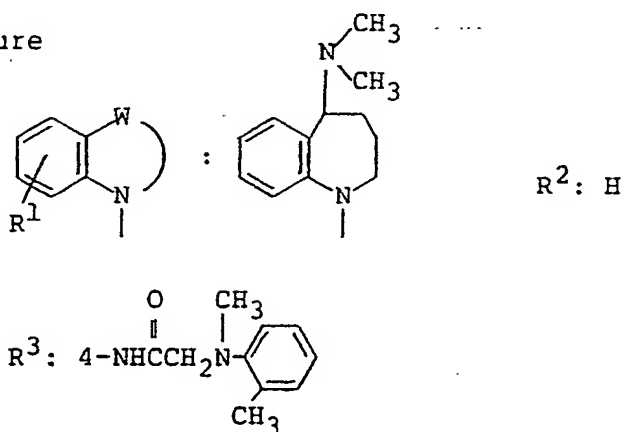
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 112 - 114°C

Form: Free

Example 953

Structure



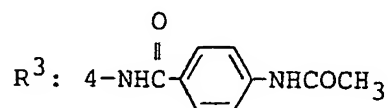
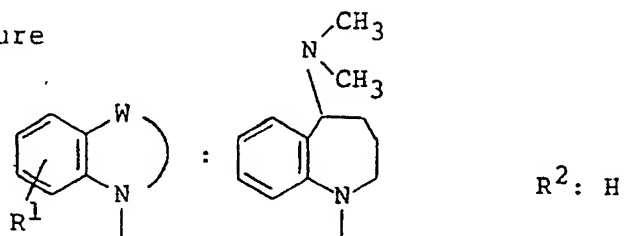
Crystalline form: Colorless oil

NMR analysis: 172)

Form: Free

Example 954

Structure



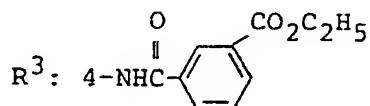
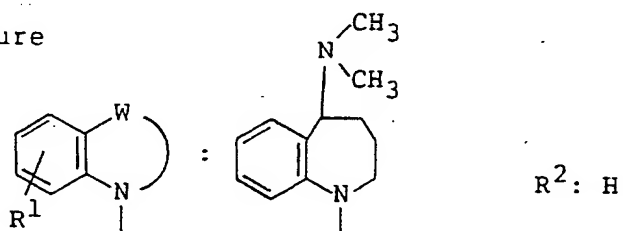
Crystalline form: Colorless amorphous

NMR analysis: 173)

Form: Free

Example 955

Structure



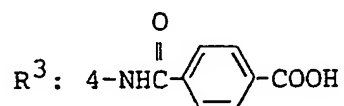
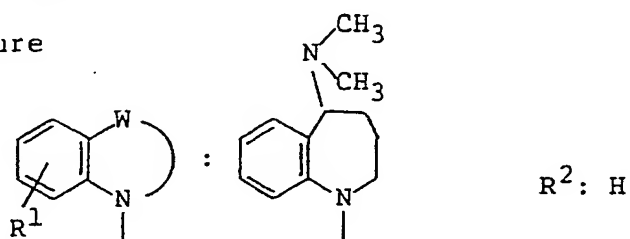
Crystalline form: Light yellow amorphous

NMR analysis: 174)

Form: Free

Example 956

Structure



Crystalline form: White powder

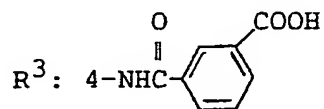
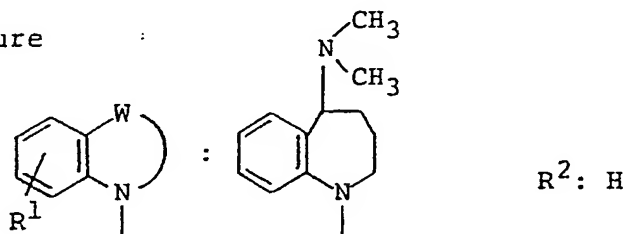
Recrystallization solvent: Diethyl ether

Melting Point: 189 - 193°C

Form: Free

Example 957

Structure



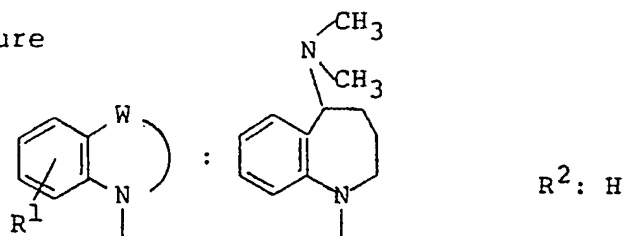
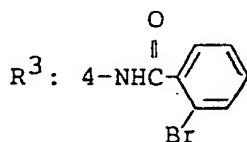
Crystalline form: Colorless amorphous

NMR analysis: 175)

Form: Free

Example 958

Structure

 $R^2: H$ 

Crystalline form: Colorless prisms

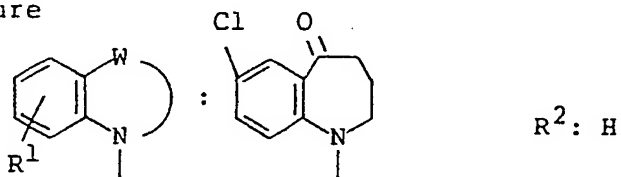
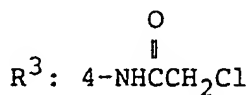
Recrystallization solvent: Ethanol

Melting Point: 234 - 238°C

Form: Free

Example 959

Structure

 $R^2: H$ 

Crystalline form: White powder

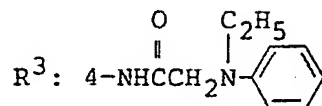
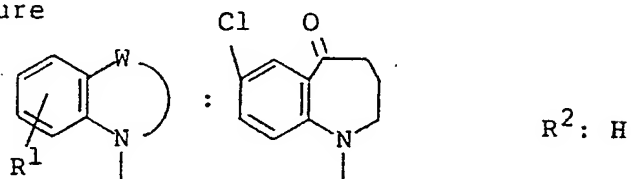
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 183 - 184.5°C

Form: Free

Example 960

Structure



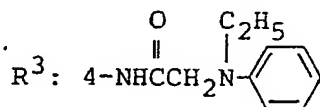
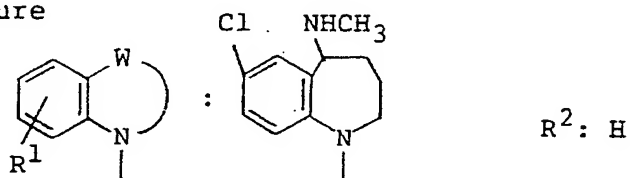
Crystalline form: Brown oil

NMR analysis: 176)

Form: Free

Example 961

Structure



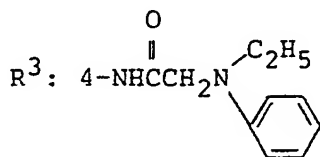
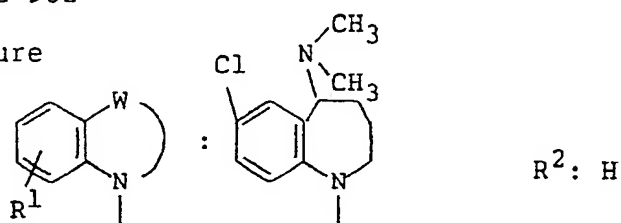
Crystalline form: Colorless amorphous

NMR analysis: 177)

Form: Free

Example 962

Structure



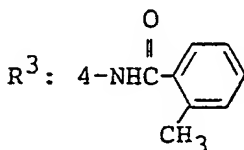
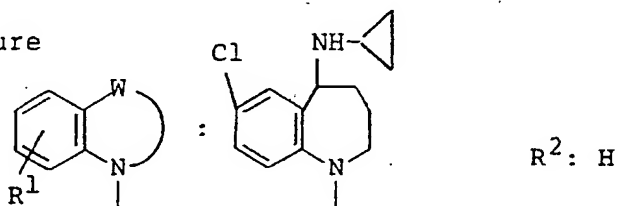
Crystalline form: Colorless amorphous

NMR analysis: 178)

Form: Free

Example 963

Structure



Crystalline form: White powder

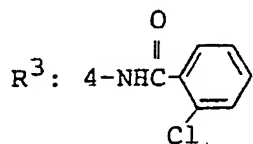
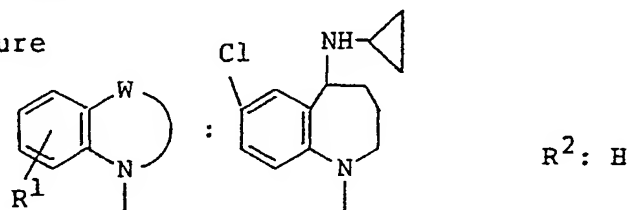
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 202.5 - 204.5°C

Form: Free

Example 964

Structure



Crystalline form: White powder

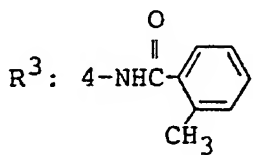
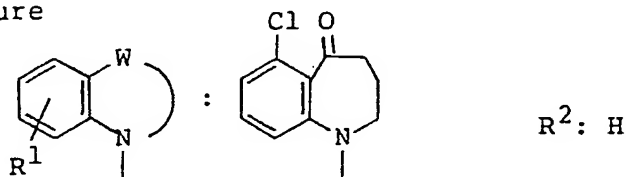
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 199.5 - 201°C

Form: Free

Example 965

Structure



Crystalline form: White powder

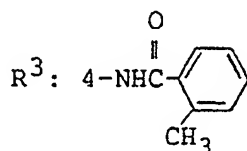
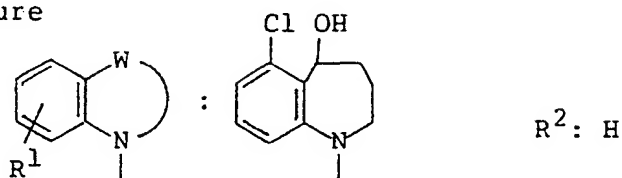
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 196.5 - 197°C

Form: Free

Example 966

Structure



Crystalline form: White powder

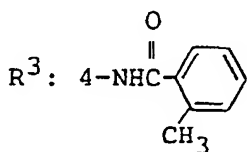
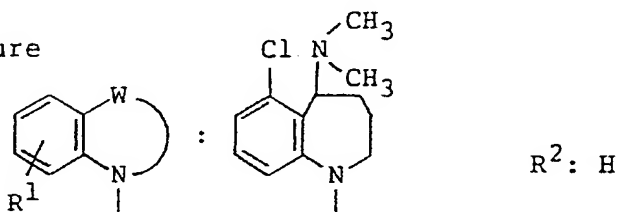
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 204 - 205°C

Form: Free

Example 967

Structure



Crystalline form: White powder

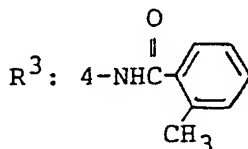
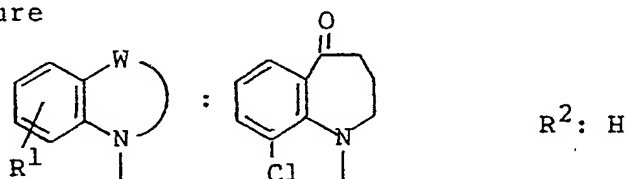
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 175 - 177°C

Form: Free

Example 968

Structure



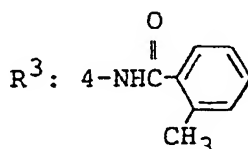
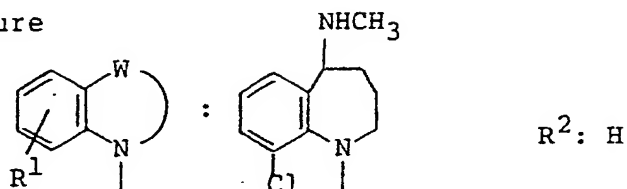
Crystalline form: Pink amorphous

NMR analysis: 179)

Form: Free

Example 969

Structure



Crystalline form: White powder

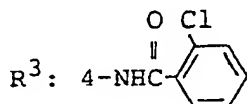
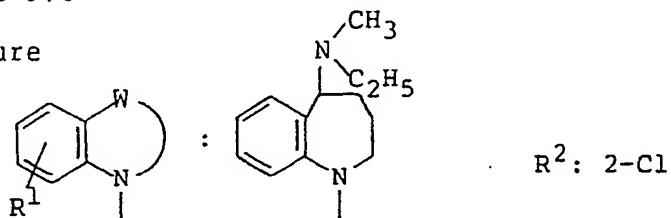
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 186 - 189°C

Form: Free

Example 970

Structure



Crystalline form: Colorless prisms

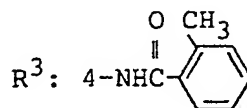
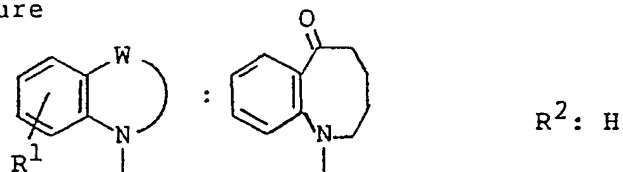
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 211 - 212°C

Form: Free

Example 971

Structure



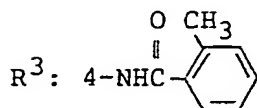
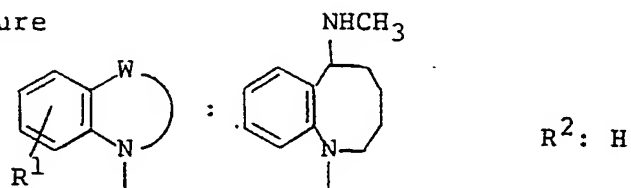
Crystalline form: Colorless amorphous

NMR analysis: 180)

Form: Free

Example 972

Structure



Crystalline form: Colorless needles

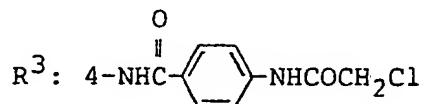
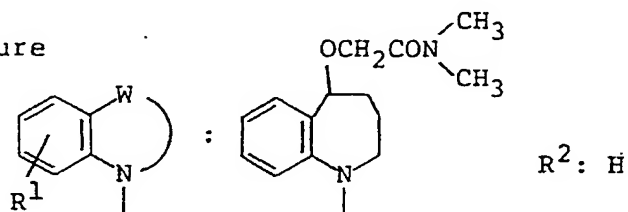
Recrystallization solvent: Ethanol

Melting Point: 206 - 207°C

Form: Free

Example 973

Structure



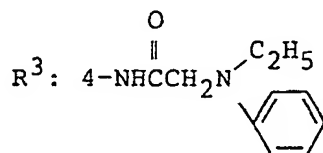
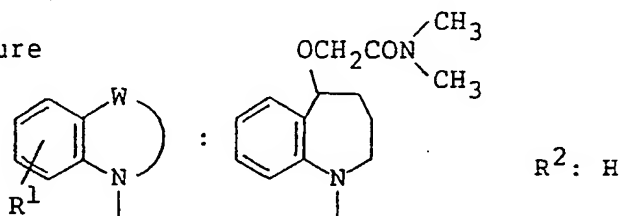
Crystalline form: Colorless amorphous

NMR analysis: 181)

Form: Free

 Example 974

Structure



Crystalline form: White powder

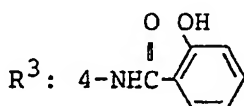
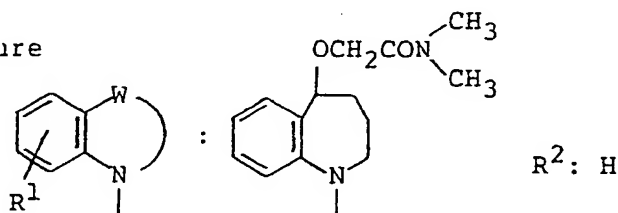
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 152 - 154°C

Form: Free

 Example 975

Structure



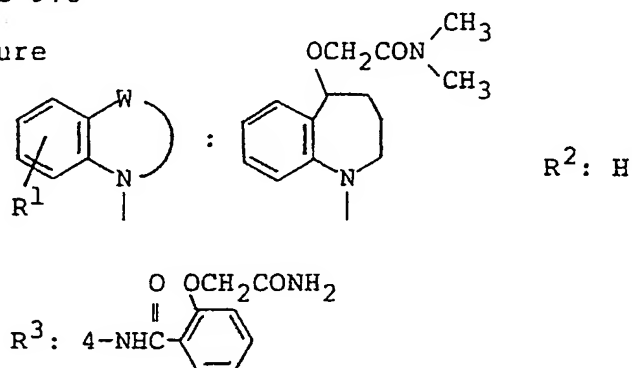
Crystalline form: Colorless amorphous

NMR analysis: 182)

Form: Free

 Example 976

Structure



Crystalline form: White powder

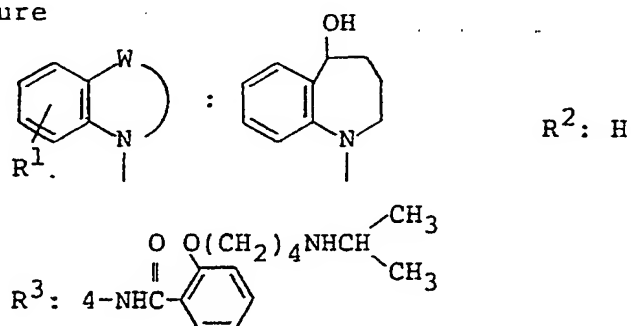
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 204 - 206°C

Form: Free

 Example 977

Structure



Crystalline form: Colorless needles

Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 162 - 163°C

Form: Free

- 167) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.14-2.83 (13H, m), 2.43 (3H, s), 2.95-5.19 (4H, m), 4.12 (2H, t, $J=6.2$ Hz), 6.27-6.83 (2H, m), 6.83-7.36 (6H, m), 7.36-7.67 (4H, m), 7.93-8.11 (1H, m), 9.77 (1H, brs)
- 168) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.11-2.98 (11H, m), 2.80 (3H, s), 3.69 (2H, s), 2.98-5.24 (2H, m), 6.50-7.71 (12H, m), 9.37 (1H, brs)
- 169) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.80 (14H, m), 2.99 (3H, s), 3.39-5.20 (2H, m), 4.00 (2H, s), 6.49-7.67 (12H, m), 8.51 (1H, brs)
- 170) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-1.98 (3H, m), 1.98-2.82 (10H, m), 2.82-3.20 (2H, m), 3.34-5.15 (2H, m), 6.48-7.68 (15H, m), 7.86 (1H, brs)
- 171) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.84 (10H, m), 2.40 (3H, s), 2.90-5.20 (2H, m), 3.79 (2H, d, $J=2.7$ Hz), 4.33 (1H, br), 6.30-7.68 (12H, m), 8.67 (1H, brs)
- 172) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.85 (14H, m), 2.72 (3H, s), 2.98-5.20 (2H, m), 3.62 (2H, s), 6.50-7.75 (12H, m), 9.18 (1H, brs)
- 173) $^1\text{H-NMR}$ (DMSO-d_6) δ ; 1.28-2.62 (4H, m), 2.07 (3H, s), 2.34 (6H, s), 3.04-3.57 (2H, m), 3.99-4.86 (1H, m), 6.62-7.88 (12H, m), 10.12-10.20 (2H, m)
- 174) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.39 (3H, t, $J=7.1$ Hz), 1.64-2.68 (4H, m), 2.42 (6H, s), 3.04-3.58 (2H, m), 3.98-5.01 (1H, m), 4.38 (2H, q, $J=7.1$ Hz), 6.57-8.57 (13H, m)

- 175) ^1H -NMR ($\text{DMSO}-d_6$) δ ; 1.67-5.02 (7H, m), 3.35 (6H, s), 6.75-8.17 (12H, m), 8.46 (1H, s), 10.54 (1H, s)
- 176) ^1H -NMR (CDCl_3) δ ; 1.21 (3H, t, $J=7.1$ Hz), 1.95-2.30 (2H, m), 2.88 (2H, t, $J=6.2$ Hz), 3.40-3.65 (2H, m), 3.70-4.50 (2H, m), 3.91 (2H, s), 6.66 (1H, d, $J=8.5$ Hz), 6.70-7.00 (3H, m), 7.10-7.50 (7H, m), 7.81 (1H, d, $J=2.5$ Hz), 8.44 (1H, s)
- 177) ^1H -NMR (CDCl_3) δ ; 1.21 (3H, t, $J=7$ Hz), 1.30-5.20 (11H, m), 3.48 (2H, q, $J=7$ Hz), 3.90 (2H, s), 6.53 (1H, d, $J=8.3$ Hz), 6.65-7.00 (4H, m), 7.00-7.40 (6H, m), 7.51 (1H, d, $J=2.5$ Hz), 8.40 (1H, s)
- 178) ^1H -NMR (CDCl_3) δ ; 1.21 (3H, t, $J=7$ Hz), 1.20-5.20 (15H, m), 3.90 (2H, s), 6.48 (1H, d, $J=8.3$ Hz), 6.50-7.70 (11H, m), 8.39 (1H, s)
- 179) ^1H -NMR (CDCl_3) δ ; 1.60-2.20 (1H, m), 2.10-2.35 (1H, m), 2.45 (3H, s), 2.70-2.95 (2H, m), 3.25-3.45 (1H, m), 4.60-4.85 (1H, m), 7.10-7.80 (12H, m)
- 180) ^1H -NMR (CDCl_3) δ ; 1.65-2.15 (4H, m), 2.46 (3H, s), 2.6-5.15 (4H, m), 6.75-6.95 (1H, m), 7.15-7.55 (10H, m), 7.61 (1H, s), 7.95-8.1 (1H, m)
- 181) ^1H -NMR (CDCl_3) δ ; 1.60-2.15 (3H, m), 2.15-2.90 (2H, m), 2.90-3.22 (6H, m), 4.00-4.50 (2H, m), 4.13 (2H, s), 4.58-5.22 (2H, m), 6.53-6.80 (1H, m), 6.90-7.90 (7H, m), 8.48 (1H, s)
- 182) ^1H -NMR (CDCl_3) δ ; 1.48-2.20 (3H, m), 2.20-2.85 (2H, m), 2.85-3.27 (6H, m), 4.05-4.47 (2H, m),

4.47-5.22 (2H, m), 6.50-6.76 (1H, m), 6.76-6.91
(1H, m), 6.91-7.69 (9H, m), 7.69-8.13 (1H, m), 9.28
(1H, s), 11.87 (1H, brs)

Example 978

5-Dimethylamino-1-(2-methyl-4-aminobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine (H) (1.00 g) is dissolved
in dichloromethane (30 ml), and thereto is added triethyl-
amine (0.48 ml) under ice-cooling, and further added
dropwise 2-methylbenzoyl chloride (0.44 ml). The mixture is
stirred at room temperature for 1 hour. The reaction
solution is washed with water, and dried over magnesium
sulfate. The solvent is distilled off, and the resulting
residue is crystallized by adding thereto ethyl acetate.
The precipitated crystal is recrystallized from dichloro-
methane/ethyl acetate to give 5-dimethylamino-1-[2-methyl-4-
(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-
benzazepine (0.92 g) as white powder, m.p. 191 - 192°C.

HPLC retention time: 7.5 minutes

Column; Wakosil II 5C₁₈ (trade mark; Wako Pure
Chemical Co., Ltd.)

Solvent; acetonitrile : 50 mN aqueous Na₂SO₄
solution : acetic acid = 27 : 73 : 1

Rate; 1.0 ml/min.

$[\alpha]_D^{22} = 0^\circ$ (c=1.0, chloroform)

¹H-NMR (CDCl₃) δ ; 1.15-3.25 (17H, m), 3.35-5.14

(2H, m), 6.62-8.05 (12H, m)

Charts of $^1\text{H-NMR}$ (CDCl_3) of the starting compound (H) and the compound obtained in Example 978 are shown in Fig. 1 and Fig. 2, respectively.

Example 979

Using 5-dimethylamino-1-(2-methyl-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine (G) (1.00 g), 5-dimethylamino-1-[2-methyl-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (0.48 g) is obtained in the same manner as in Example 978 except that methanol/diethyl ether is used instead of ethyl acetate as recrystallization solvent, as white powder, m.p. 183 - 185°C.

HPLC retention time : 8.1 minutes

(the conditions of HPLC are same as those in Example 978)

$[\alpha]_D^{22} = 0^\circ$ (c=1.3, chloroform)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-3.20 (17H, m), 3.35-5.15 (2H, m), 6.50-6.80 (1H, m), 6.86-7.62 (10H, m), 7.65-8.09 (1H, m)

Charts of $^1\text{H-NMR}$ (CDCl_3) of the starting compound (G) and the compound obtained in Example 979 are shown in Fig. 3 and Fig. 4, respectively.

Reference Example 18

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

7-Methoxy-5-oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless needles, m.p. 178 - 178.5°C (recrystallized from ethyl acetate/n-hexane)

7-Methoxy-5-oxo-1-(2-chloro-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 150 - 151°C (recrystallized from ethyl acetate/n-hexane)

7-Methoxy-5-oxo-1-(3-methoxy-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 116 - 118°C (recrystallized from ethyl acetate/n-hexane)

7-Chloro-5-oxo-1-(3-methoxy-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder, m.p. 156 - 158°C (recrystallized from diethyl ether/dichloromethane)

Reference Example 19

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

7-Methoxy-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 172.5 - 173.5°C (recrystallized from ethyl acetate/n-hexane)

7-Methoxy-5-oxo-1-(2-chloro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder, m.p. 153 - 155°C (recrystallized from ethyl acetate/n-hexane)

7-Methoxy-5-oxo-1-(3-methoxy-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, colorless needles, m.p. 170 - 171°C (recrystallized from ethyl acetate/n-hexane)

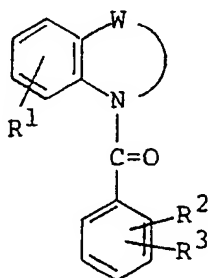
7-Chloro-5-oxo-1-(3-methoxy-4-aminobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine, yellow oil

$^1\text{H-NMR}$ (CDCl_3) δ ; 2.05-2.30 (2H, m), 2.85-3.00
(2H, m), 3.70 (3H, s), 3.85-4.30 (4H, m), 6.42 (1H, d, $J=8.1$
Hz), 6.64 (1H, dd, $J=1.7$ Hz, 8.1 Hz), 6.72 (1H, d, $J=8.5$
Hz), 6.80 (1H, d, $J=1.8$ Hz), 7.19 (1H, dd, $J=2.6$ Hz, 8.5
Hz), 7.81 (1H, d, $J=2.5$ Hz)

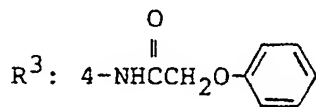
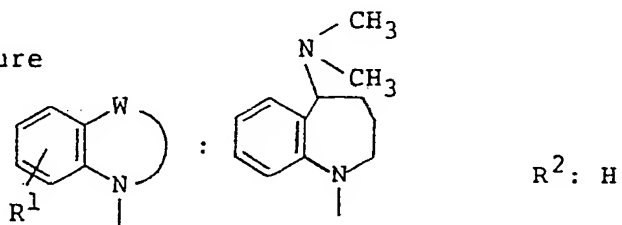
Using the suitable starting materials, the compounds of the following Table 7 are obtained in the same manner as in above Examples 1 and 382.

Table 7



Example 980

Structure



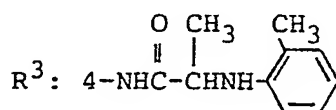
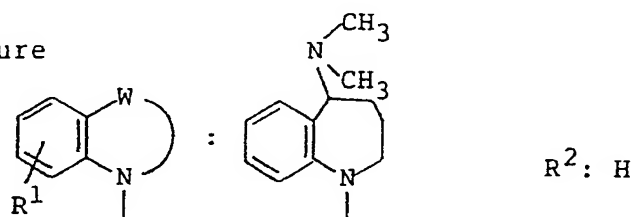
Crystalline form: Colorless amorphous

NMR analysis: 183)

Form: Free

Example 981

Structure



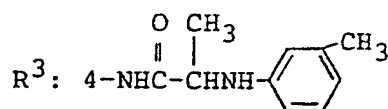
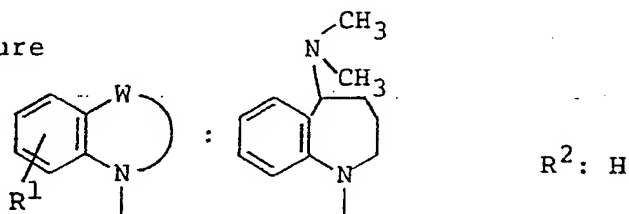
Crystalline form: Colorless amorphous

NMR analysis: 184)

Form: Free

Example 982

Structure



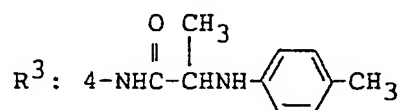
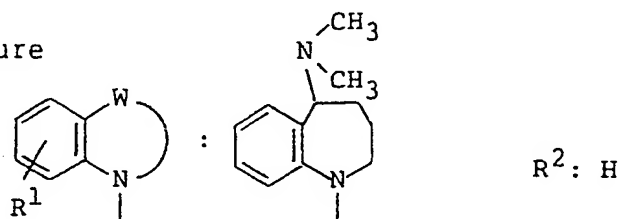
Crystalline form: Colorless amorphous

NMR analysis: 185)

Form: Free

Example 983

Structure



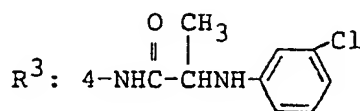
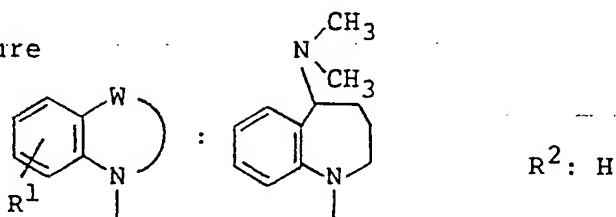
Crystalline form: Colorless amorphous

NMR analysis: 186)

Form: Free

Example 984

Structure



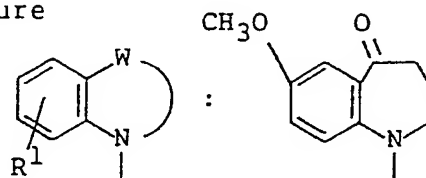
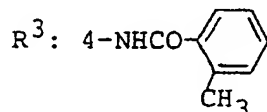
Crystalline form: Colorless amorphous

NMR analysis: 187)

Form: Free

Example 985

Structure

 R^2 : 2-Cl

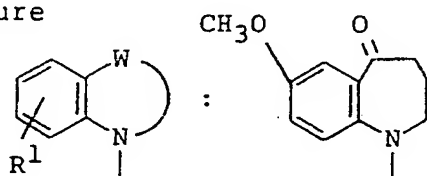
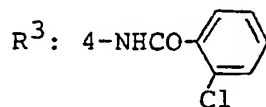
Crystalline form: Colorless amorphous

NMR analysis: 188)

Form: Free

Example 986

Structure

 R^2 : 2-Cl

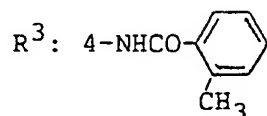
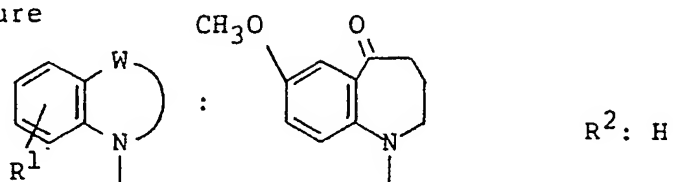
Crystalline form: Colorless amorphous

NMR analysis: 189)

Form: Free

Example 987

Structure



Crystalline form: White powder

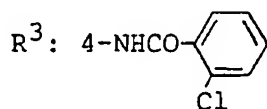
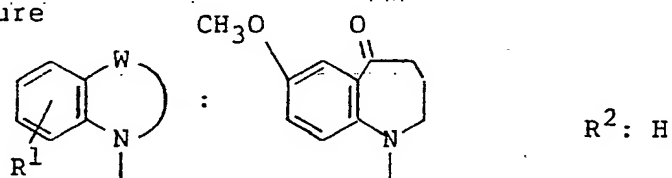
Recrystallization solvent: Ethanol/water

Melting Point: 267 - 268°C

Form: Free

Example 988

Structure



Crystalline form: White powder

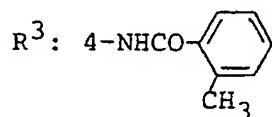
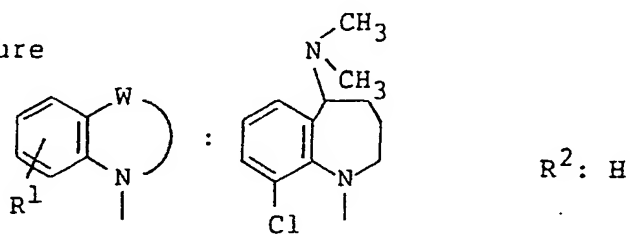
Recrystallization solvent: Ethanol/water

Melting Point: 264 - 266°C

Form: Free

Example 989

Structure



Crystalline form: White powder

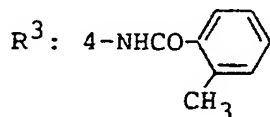
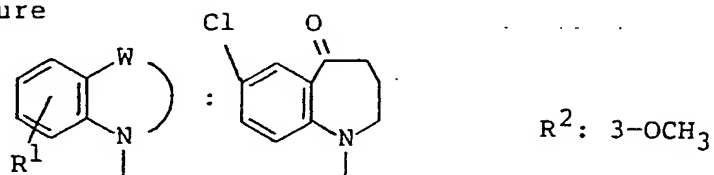
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 218 - 220°C

Form: Free

Example 990

Structure



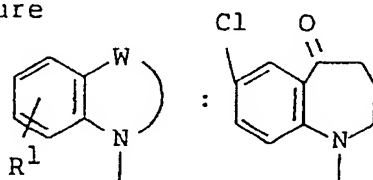
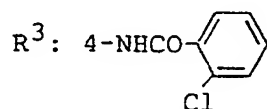
Crystalline form: Yellow oil

NMR analysis: 190)

Form: Free

Example 991

Structure

 $R^2: 3\text{-OCH}_3$ 

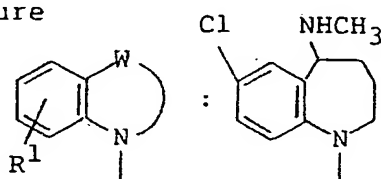
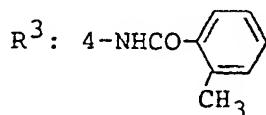
Crystalline form: Yellow oil

NMR analysis: 191)

Form: Free

Example 992

Structure

 $R^2: 3\text{-OCH}_3$ 

Crystalline form: Yellow powder

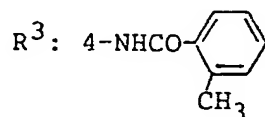
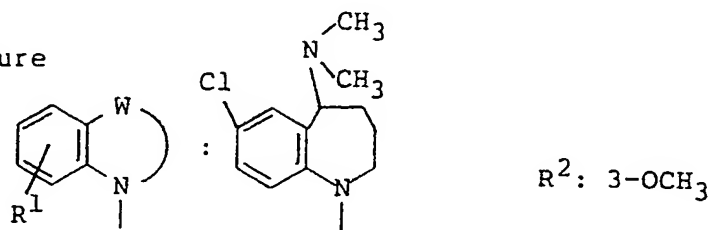
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 174 - 177°C

Form: Free

Example 993

Structure



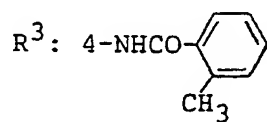
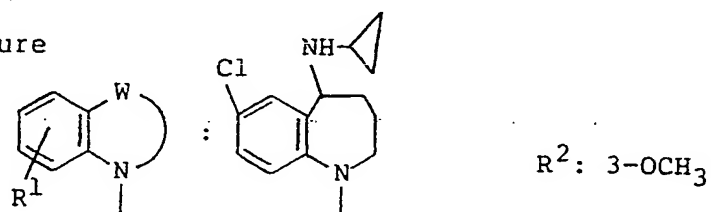
Crystalline form: Yellow amorphous

NMR analysis: 192)

Form: Free

Example 994

Structure



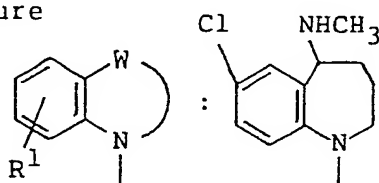
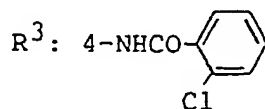
Crystalline form: Colorless amorphous

NMR analysis: 193)

Form: Free

Example 995

Structure

 $R^2: 3-OCH_3$ 

Crystalline form: White powder

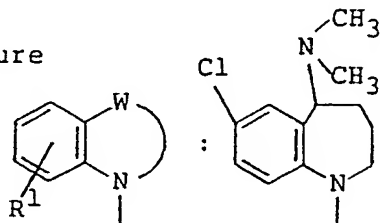
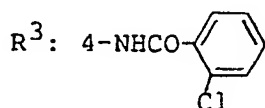
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 163 - 165°C

Form: Free

Example 996

Structure

 $R^2: 3-OCH_3$ 

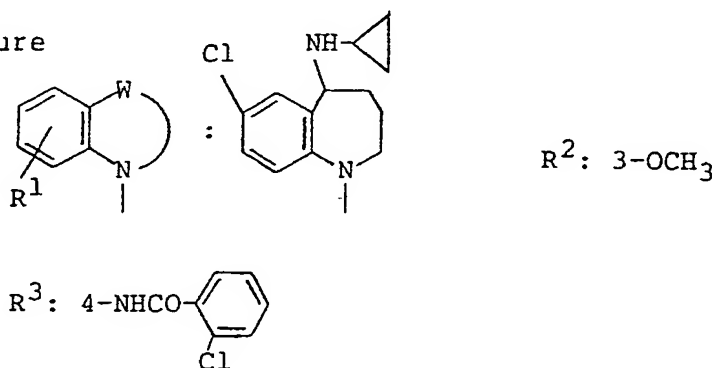
Crystalline form: Colorless amorphous

NMR analysis: 194)

Form: Free

Example 997

Structure



Crystalline form: Colorless amorphous

NMR analysis: 195)

Form: Free

- 183) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.83 (11H, m), 2.96-5.21 (2H, m), 4.55 (2H, s), 6.48-7.72 (13H, m), 8.30 (1H, brs)
- 184) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.85 (11H, m), 1.58 (3H, d, $J=6.8$ Hz), 2.23 (3H, s), 2.95-5.19 (4H, m), 6.38-7.70 (12H, m), 8.69 (1H, brs)
- 185) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.85 (14H, m), 2.26 (3H, s), 2.96-5.19 (4H, m), 6.36-7.68 (12H, m), 8.72 (1H, brs)
- 186) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.09-2.72 (11H, m), 1.53 (3H, d, $J=6.9$ Hz), 2.24 (3H, s), 2.93-5.21 (4H, m), 6.30-7.78 (12H, m), 8.76 (1H, brs)
- 187) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.82 (14H, m), 2.96-5.20 (4H, m), 6.38-7.70 (12H, m), 8.54 (1H, brs)
- 188) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.64-2.28 (2H, m), 2.41 (3H, s), 2.60-2.90 (2H, m), 2.90-3.70 (1H, m), 3.76 (3H, s), 4.10-5.10 (1H, m), 6.60-7.70 (10H, m), 8.51 (1H, s)
- 189) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.64-2.43 (2H, m), 2.67-2.97 (2H, m), 3.00-3.70 (1H, m), 3.77 (3H, s), 4.20-5.10 (1H, m), 6.60-7.75 (10H, m), 8.51 (1H, s)
- 190) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.00-2.35 (2H, m), 2.49 (3H, s), 2.89 (2H, t, $J=6.2$ Hz), 3.72 (3H, s), 3.40-4.80 (2H, m), 6.74 (2H, d, $J=8.5$ Hz), 6.80-7.00 (2H, m), 7.25-7.60 (5H, m), 7.80 (1H, d, $J=2.6$ Hz), 8.16 (1H, s), 8.37 (1H, d, $J=8.6$ Hz)

- 191) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.90-2.40 (2H, m), 2.90 (2H, t, $J=6.2$ Hz), 3.75 (3H, s), 3.40-4.80 (2H, m), 6.74 (1H, d, $J=8.5$ Hz), 6.80-7.00 (2H, m), 7.10-7.50 (4H, m), 7.73 (1H, dd, $J=2.3$ Hz, 6 Hz), 7.80 (1H, d, $J=2.5$ Hz), 8.38 (1H, d, $J=8.8$ Hz), 8.65 (1H, s)
- 192) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.10 (13H, m), 2.90-5.20 (6H, m), 6.56 (1H, d, $J=8.4$ Hz), 6.69 (1H, d, $J=7$ Hz), 6.85-7.70 (7H, m), 8.15 (1H, s), 8.31 (1H, d, $J=8.4$ Hz)
- 193) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.65 (4H, m), 1.20-2.50 (7H, m), 2.50 (3H, s), 3.10-5.20 (2H, m), 3.75 (3H, s), 6.60 (1H, d, $J=8.3$ Hz), 6.70-7.60 (8H, m), 8.14 (1H, s), 8.20-8.40 (1H, m)
- 194) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.80-2.50 (10H, m), 2.90-4.10 (6H, m), 6.50-7.80 (9H, m), 8.32 (1H, d, $J=8$ Hz), 8.62 (1H, s)
- 195) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.65 (4H, m), 0.70-2.40 (6H, m), 2.60-5.20 (6H, m), 6.50-7.80 (9H, m), 8.30 (1H, d, $J=8$ Hz), 8.62 (1H, s)

Reference Example 20

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

7-Methyl-5-oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white needles

$^1\text{H-NMR}$ (CDCl_3) δ ; 2.20 (2H, brs), 2.32 (3H, s),

2.88 (2H, t, J=6.3 Hz), 3.40-4.79 (2H, m), 6.57 (1H, d, J=8.0 Hz), 7.04 (1H, d, J=7.7 Hz), 7.36 (2H, d, J=8.6 Hz), 7.62 (1H, d, J=1.7 Hz), 8.04 (2H, d, J=8.7 Hz)

7-Dimethylamino-5-oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, red brown prisms (recrystallized from dichloromethane/diethyl ether)

¹H-NMR (CDCl₃) δ ; 1.75-2.47 (2H, m), 2.60-3.62, 4.51-4.92 (total 4H, m), 2.93 (6H, s), 6.46 (1H, dd, J=2.2 Hz, 7.0 Hz), 6.52 (1H, d, J=7.0 Hz), 7.33 (2H, d, J=7.0 Hz), 8.00 (2H, d, J=7.0 Hz)

7-Bromo-5-oxo-1-(4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder (recrystallized from dichloromethane/diethyl ether), m.p. 177 - 182°C

7-Chloro-5-oxo-1-(2-methyl-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, white powder (recrystallized from dichloromethane/diethyl ether)

¹H-NMR (CDCl₃) δ ; 1.78-2.37 (2H, m), 2.48 (3H, s), 2.88 (2H, t, J=6.1 Hz), 3.30-5.12 (2H, m), 6.47-6.82 (1H, m), 6.82-7.09 (1H, m), 7.09-7.27 (1H, m), 7.48-8.35 (3H, m)

6-Oxo-1-(2-chloro-4-nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, yellow amorphous

¹H-NMR (CDCl₃) δ ; 1.7-2.1 (4H, m), 2.85-4.7 (4H, m), 7.12 (1H, d, J=8.4 Hz), 7.17-7.51 (4H, m), 7.89 (1H, dd, J=7.8 Hz, 2.1 Hz), 8.11 (1H, d, J=2.2 Hz)

8-Chloro-6-oxo-1-(2-chloro-4-nitrobenzoyl)-

1,2,3,4,5,6-hexahydrobenzazocine, yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.7-2.15 (4H, m), 2.85-4.8 (4H, m), 7.14 (1H, d, $J=8.5$ Hz), 7.16 (1H, d, $J=8.4$ Hz), 7.34 (1H, dd, $J=8.3$ Hz, 2.5 Hz), 7.85 (1H, d, $J=2.5$ Hz), 7.94 (1H, dd, $J=8.4$ Hz, 2.2 Hz), 8.13 (1H, d, $J=2.1$ Hz)

8-Methyl-6-oxo-1-(2-chloro-4-nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.2 (4H, m), 2.33 (3H, s), 2.7-5.0 (4H, m), 7.0-7.25 (3H, m), 7.67 (1H, d, $J=2.0$ Hz), 7.89 (1H, dd, $J=8.4$ Hz, 2.2 Hz), 8.10 (1H, d, $J=2.1$ Hz)

8-Methoxy-6-oxo-1-(2-chloro-4-nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.6-2.05 (4H, m), 2.8-5.2 (4H, m), 3.78 (3H, s), 6.88 (1H, dd, $J=8.6$ Hz, 3.1 Hz), 7.11 (1H, d, $J=8.4$ Hz), 7.12 (1H, d, $J=8.6$ Hz), 7.38 (1H, d, $J=3.0$ Hz), 7.90 (1H, dd, $J=8.4$ Hz, 2.2 Hz), 8.11 (1H, d, $J=2.2$ Hz)

7-Chloro-5-oxo-1-(2-chloro-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder (recrystallized from diethyl ether/dichloromethane), m.p. 125 - 126.5°C

Reference Example 21

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 2.

7-Methyl-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder

$^1\text{H-NMR}$ (CDCl_3) δ ; 2.13 (2H, brs), 2.32 (3H, s),

2.86 (2H, t, J=6.2 Hz), 2.89-5.29 (2H, m), 3.86 (2H, brs),
6.41 (2H, m), 6.65 (1H, d, J=8.1 Hz), 7.06 (3H, m), 7.65
(1H, d, J=1.7 Hz)

7-Dimethylamino-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-
tetrahydro-1H-benzazepine, yellow needles (recrystallized
from dichloromethane/diethyl ether)

¹H-NMR (CDCl₃) δ ; 1.78-2.49 (2H, m), 2.64-3.78,
4.07-5.02 (total 4H, m), 2.93 (6H, m), 3.96 (2H, m), 6.38
(2H, d, J=8.7 Hz), 6.55 (1H, dd, J=2.7, 8.7 Hz), 6.62 (1H,
d, J=8.7 Hz), 6.96-7.18 (3H, m)

7-Bromo-5-oxo-1-(4-aminobenzoyl)-2,3,4,5-tetra-
hydro-1H-benzazepine, white powder (recrystallized from
methanol/diethyl ether)

¹H-NMR (CDCl₃) δ ; 1.98-2.37 (2H, m), 2.88 (2H, t,
J=6.3 Hz), 3.52-4.55 (4H, m), 6.28-6.57 (2H, m), 6.57-6.76
(1H, m), 6.92-7.20 (2H, m), 7.28-7.42 (1H, m), 7.90-8.09
(1H, m)

7-Chloro-5-oxo-1-(2-methyl-4-aminobenzoyl)-2,3,4,5-
tetrahydro-1H-benzazepine, white powder (recrystallized from
dichloromethane/diethyl ether), m.p. 190 - 191°C

6-Oxo-1-(2-chloro-4-aminobenzoyl)-1,2,3,4,5,6-
hexahydrobenzazocine, light yellow amorphous

¹H-NMR (CDCl₃) δ ; 1.3-2.25 (4H, m), 2.8-4.4 (6H,
m), 6.1-6.9 (3H, m), 6.95-7.75 (3H, m), 7.8-8.3 (1H, m)

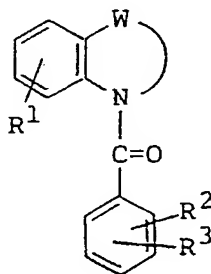
8-Chloro-6-oxo-1-(2-chloro-4-aminobenzoyl)-
1,2,3,4,5,6-hexahydrobenzazocine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.59-2.2 (4H, m), 2.6-4.4 (6H, m), 6.1-6.9 (3H, m), 6.95-7.5 (2H, m), 7.8-8.05 (1H, m)

7-Chloro-5-oxo-1-(2-chloro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, yellow powder (recrystallized from diethyl ether/dichloromethane), m.p. 188 - 191.5°C

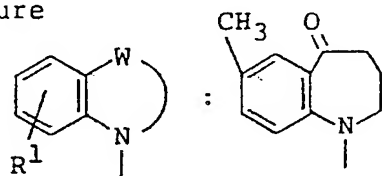
Using the suitable starting materials, the compounds of the following Table 8 are obtained in the same manner as in above Examples 1 and 382.

Table 8

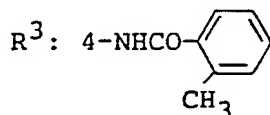


Example 998

Structure



R^2 : H



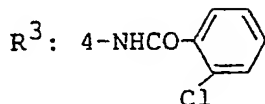
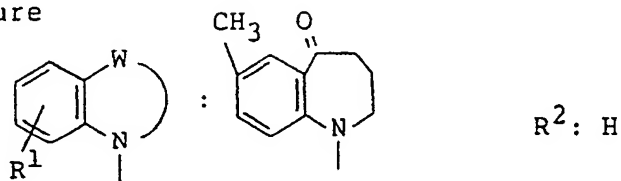
Crystalline form: White powder

NMR analysis: 196)

Form: Free

Example 999

Structure



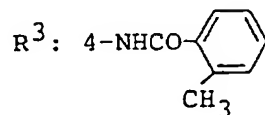
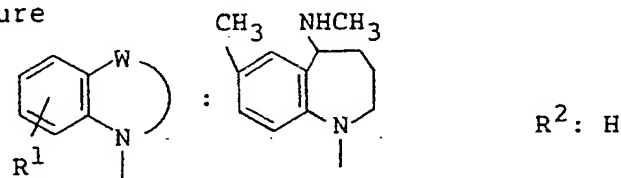
Crystalline form: White powder

NMR analysis: 197)

Form: Free

Example 1000

Structure



Crystalline form: White powder

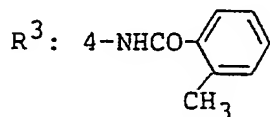
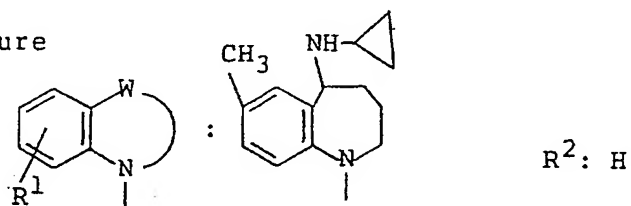
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 200 - 205°C

Form: Free

Example 1001

Structure



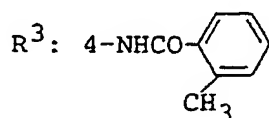
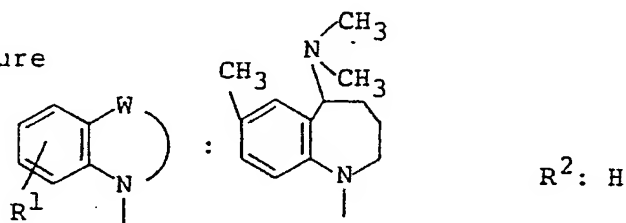
Crystalline form: Colorless amorphous

NMR analysis: 198)

Form: Free

Example 1002

Structure



Crystalline form: White powder

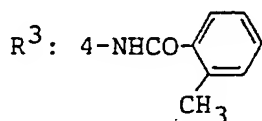
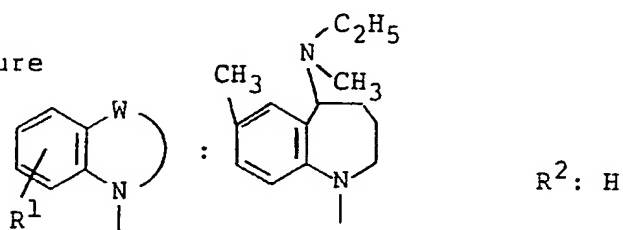
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 234 - 238°C

Form: Free

Example 1003

Structure



Crystalline form: White powder

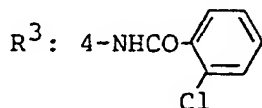
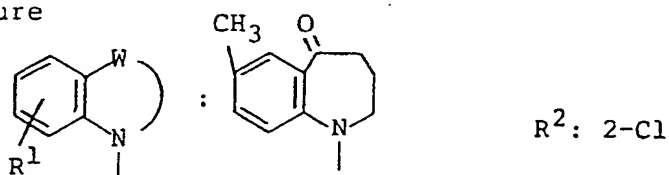
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 174 - 178°C

Form: Free

Example 1004

Structure



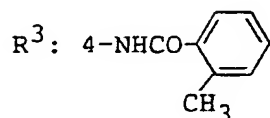
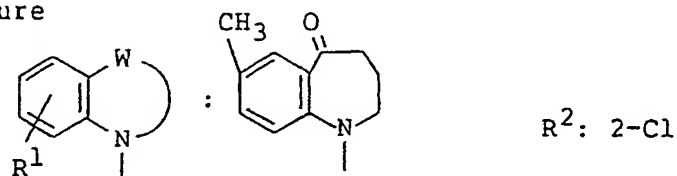
Crystalline form: Light yellow amorphous

NMR analysis: 199)

Form: Free

Example 1005

Structure



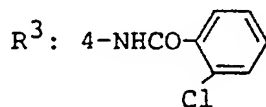
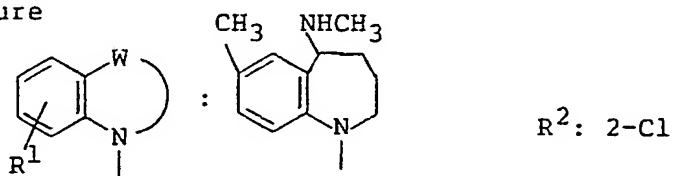
Crystalline form: Light yellow amorphous

NMR analysis: 200)

Form: Free

Example 1006

Structure



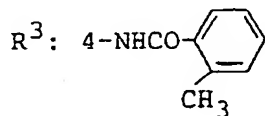
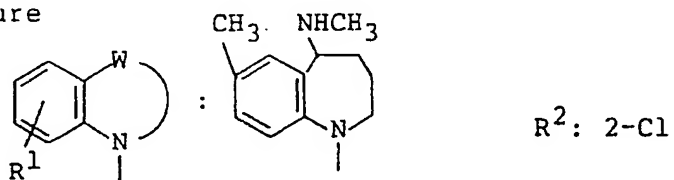
Crystalline form: Light yellow amorphous

NMR analysis: 201)

Form: Free

Example 1007

Structure



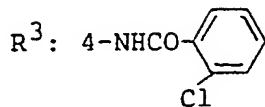
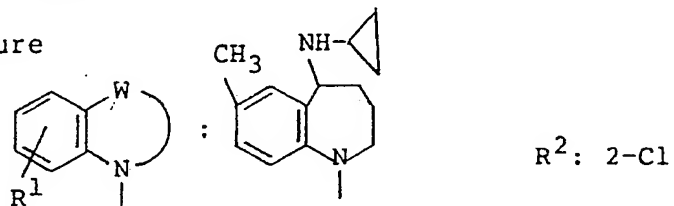
Crystalline form: Light yellow amorphous

NMR analysis: 202)

Form: Free

Example 1008

Structure



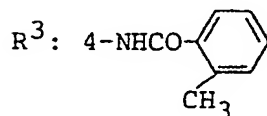
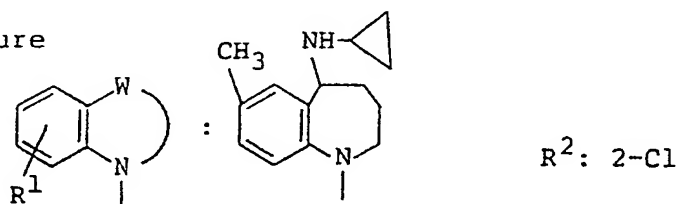
Crystalline form: Light yellow amorphous

MNR analysis: 203)

Form: Free

Example 1009

Structure



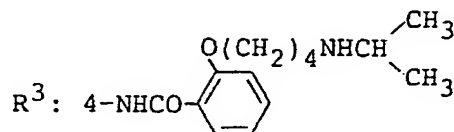
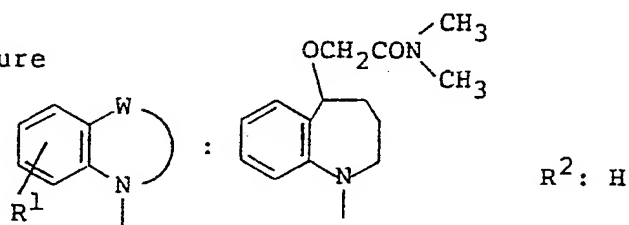
Crystalline form: Light yellow amorphous

NMR analysis: 204)

Form: Free

Example 1010

Structure



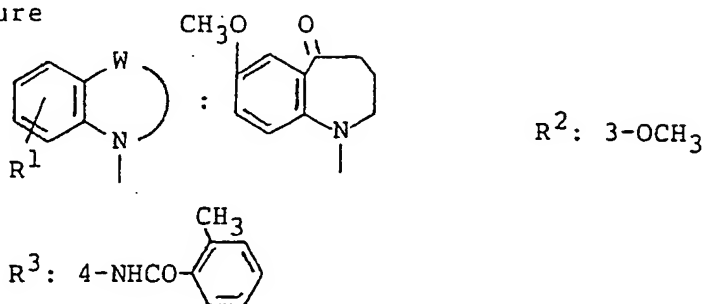
Crystalline form: Colorless amorphous

NMR analysis: 205)

Form: Free

Example 1011

Structure



Crystalline form: White powder

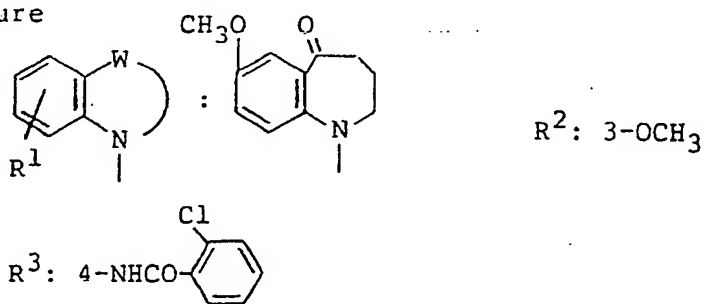
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 153 - 155°C

Form: Free

Example 1012

Structure



Crystalline form: White powder

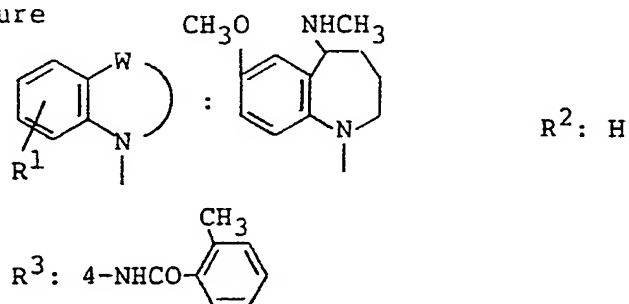
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 142 - 143°C

Form: Free

Example 1013

Structure



Crystalline form: White powder

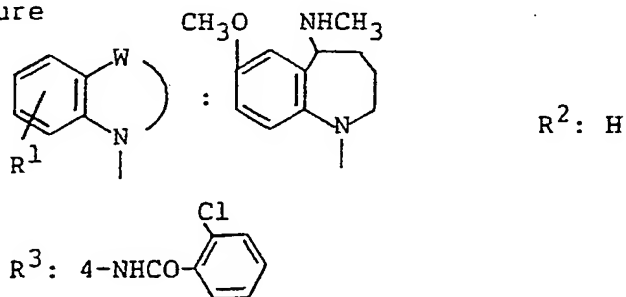
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 176 - 178°C

Form: Free

Example 1014

Structure



Crystalline form: White powder

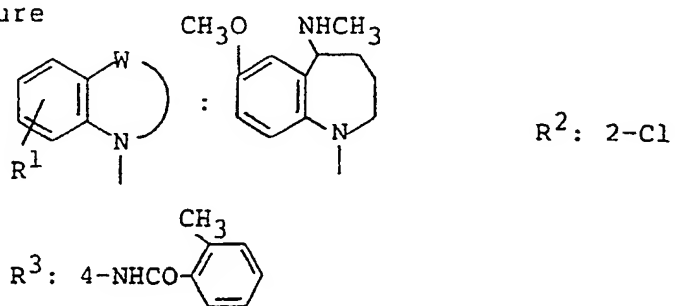
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 186 - 188°C

Form: Free

Example 1015

Structure



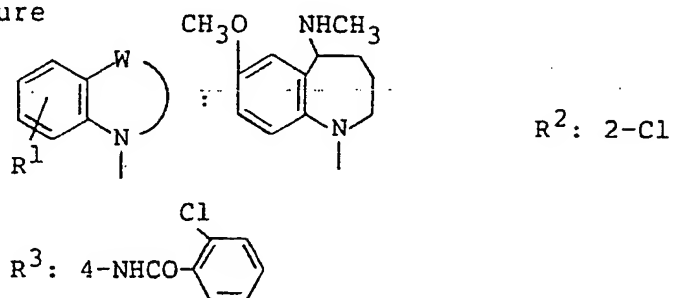
Crystalline form: Colorless amorphous

NMR analysis: 206)

Form: Free.

Example 1016

Structure



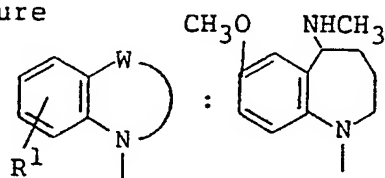
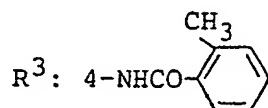
Crystalline form: Colorless amorphous

NMR analysis: 207)

Form: Free

Example 1017

Structure

 $R^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

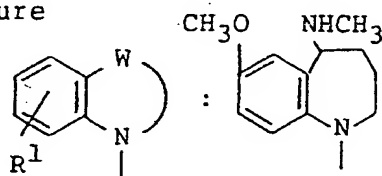
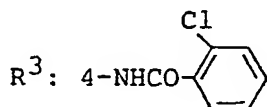
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 191 - 191.5°C

Form: Free

Example 1018

Structure

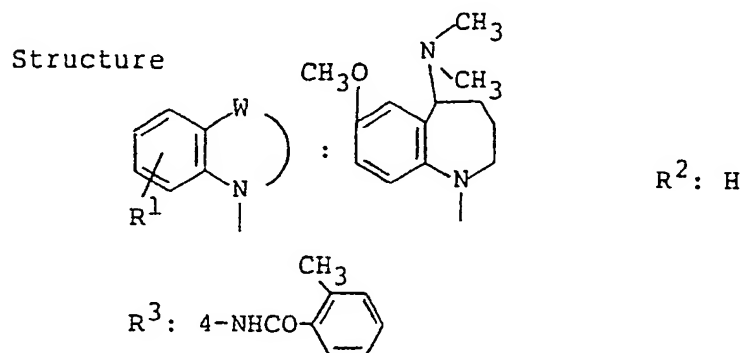
 $R^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 210 - 212°C

Form: Free

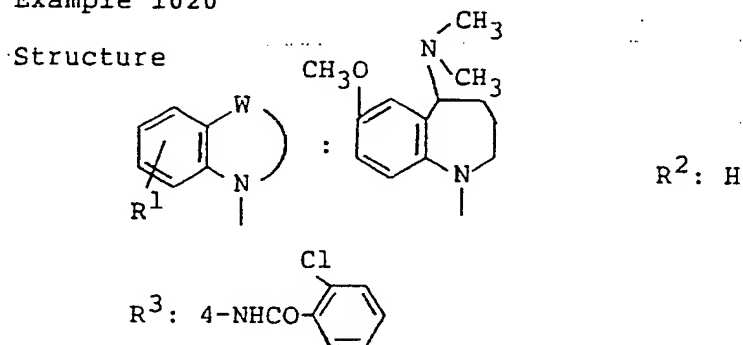
Example 1019

Crystalline form: White powder

Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 196 - 198°C

Form: Free

Example 1020

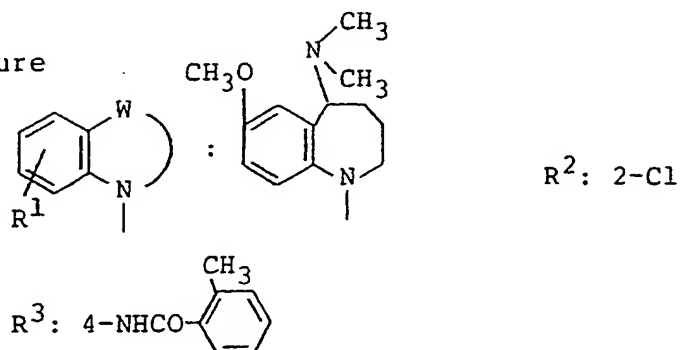
Crystalline form: Colorless amorphous

NMR analysis: 208)

Form: Free

Example 1021

Structure



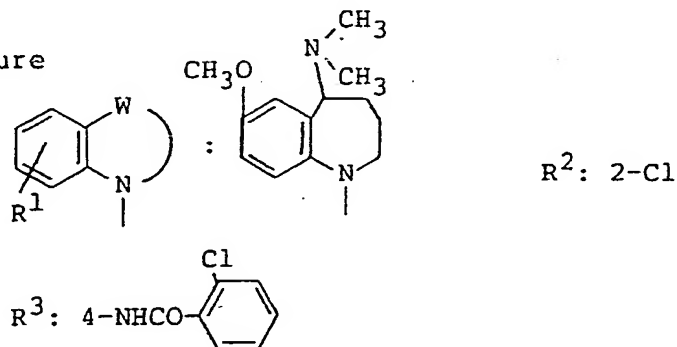
Crystalline form: Colorless amorphous

NMR analysis: 209)

Form: Free

Example 1022

Structure



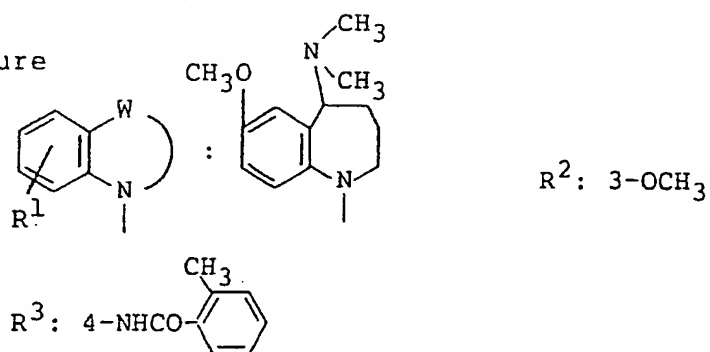
Crystalline form: Colorless amorphous

NMR analysis: 210)

Form: Free

Example 1023

Structure



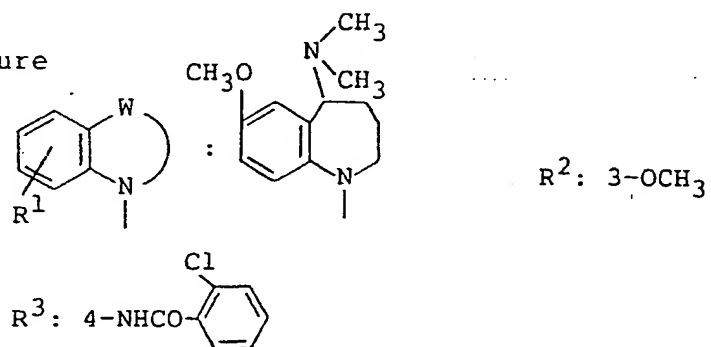
Crystalline form: Colorless amorphous

NMR analysis: 211)

Form: Free

Example 1024

Structure



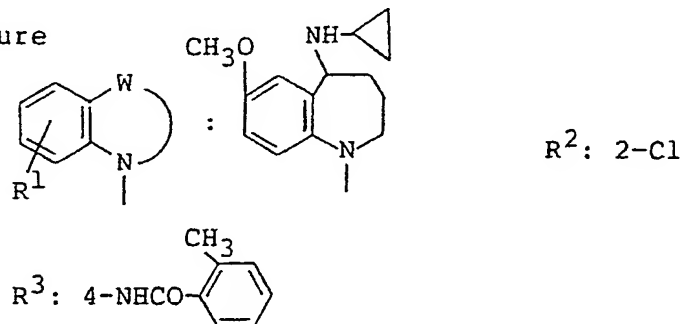
Crystalline form: Colorless amorphous

NMR analysis: 212)

Form: Free

Example 1025

Structure



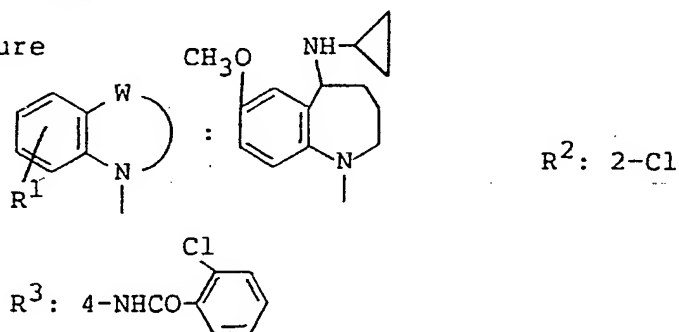
Crystalline form: Colorless amorphous

NMR analysis: 213)

Form: Free

Example 1026

Structure



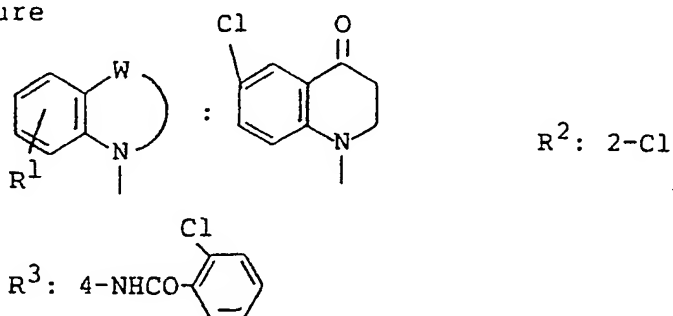
Crystalline form: Colorless amorphous

NMR analysis: 214)

Form: Free

Example 1027

Structure



Crystalline form: Colorless prisms

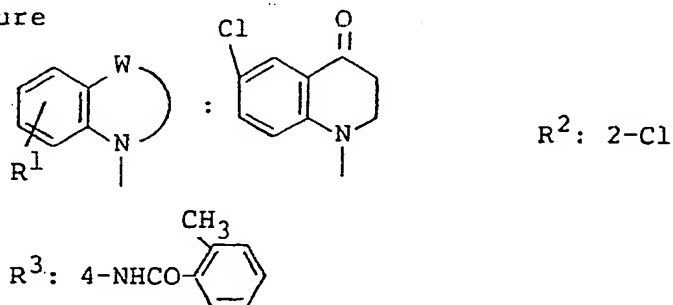
Recrystallization solvent: Ethanol

Melting Point: 207 - 208°C

Form: Free

Example 1028

Structure



Crystalline form: White powder

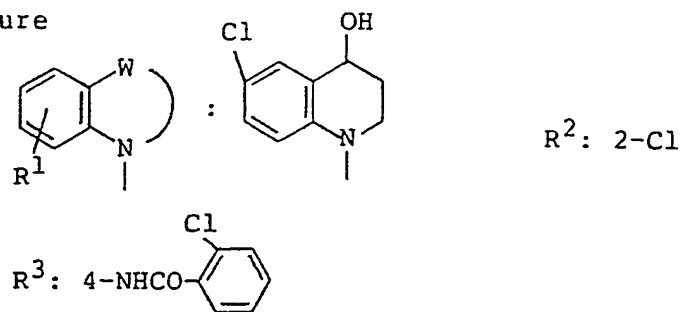
Recrystallization solvent: Ethanol

Melting Point: 201 - 202°C

Form: Free

Example 1029

Structure



Crystalline form: White powder

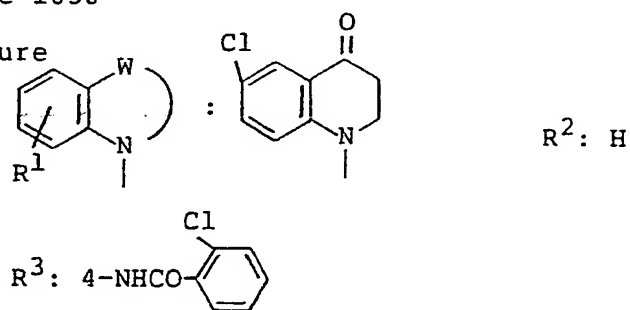
Recrystallization solvent: Ethanol

Melting Point: 193 - 194°C

Form: Free

Example 1030

Structure



Crystalline form: White powder

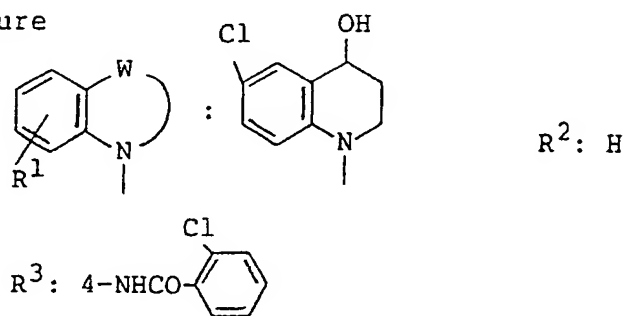
Recrystallization solvent: Ethanol

Melting Point: 205 - 208°C

Form: Free

Example 1031

Structure



Crystalline form: White powder

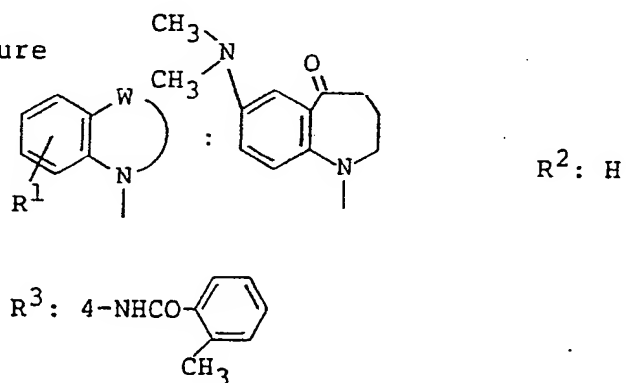
Recrystallization solvent: Ethanol

Melting Point: 214 - 216°C

Form: Free

Example 1032

Structure

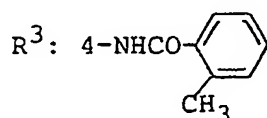
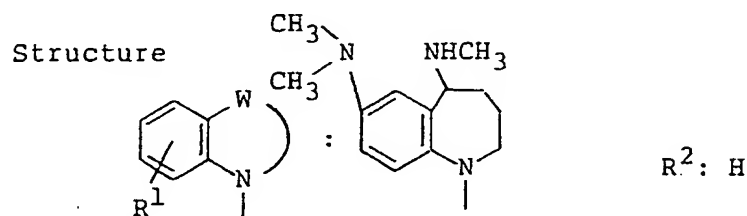


Crystalline form: Yellow needles

Recrystallization solvent: Ethanol

Melting Point: 223 - 226°C

Form: Free

Example 1033

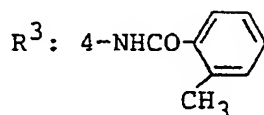
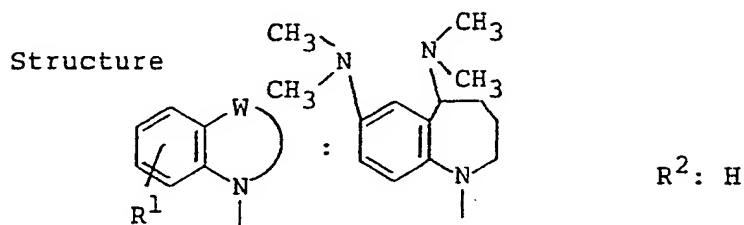
Crystalline form: Colorless needles

Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 203 - 206°C

Form: Free

Example 1034



Crystalline form: Colorless needles

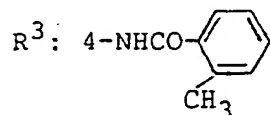
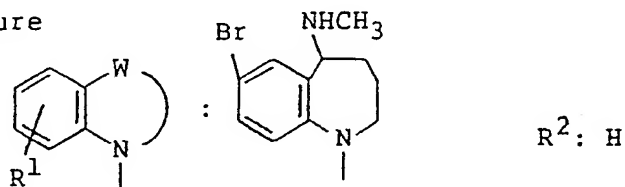
Recrystallization solvent: Ethanol/diethyl ether/n-hexane

Melting Point: 168 - 171°C

Form: Free

Example 1035

Structure



Crystalline form: White powder

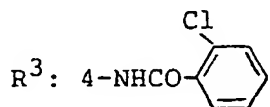
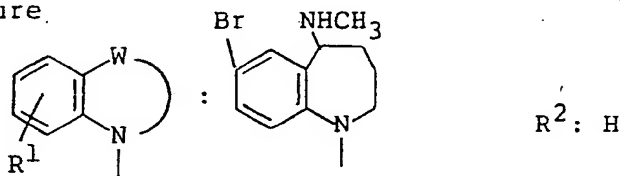
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 206 - 208°C

Form: Free

Example 1036

Structure



Crystalline form: White powder

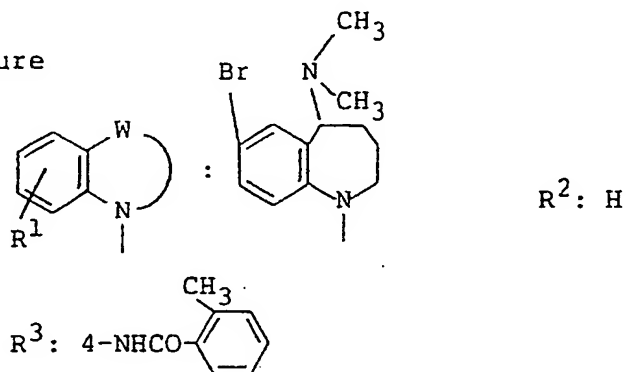
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 229 - 232°C

Form: Free

Example 1037

Structure



Crystalline form: White powder

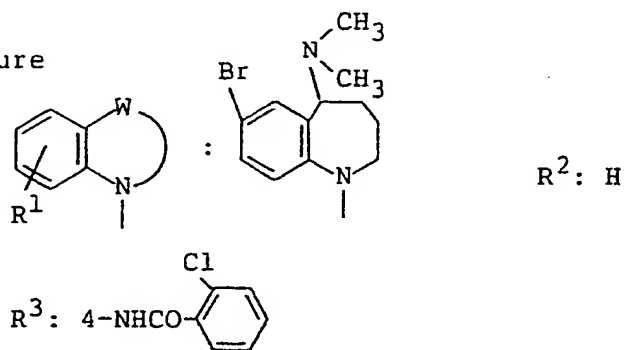
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 220 - 222°C

Form: Free

Example 1038

Structure



Crystalline form: White powder

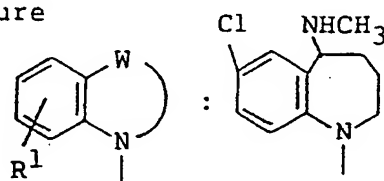
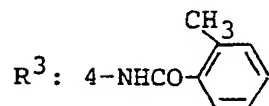
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 232 - 233.5°C

Form: Free

Example 1039

Structure

R²: 2-CH₃

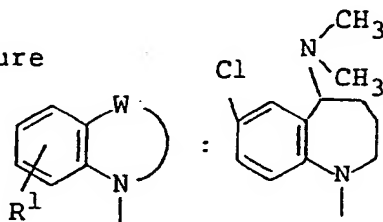
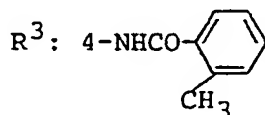
Crystalline form: Colorless amorphous

NMR analysis: 215)

Form: Free

Example 1040

Structure

R²: 2-CH₃

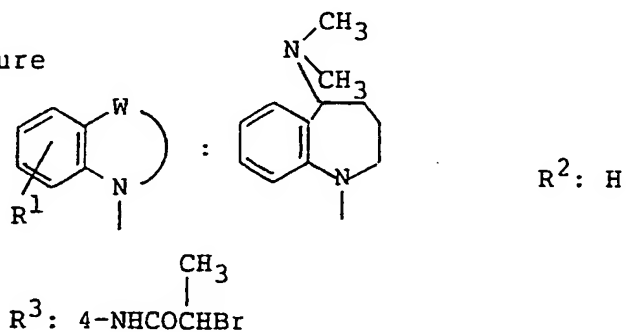
Crystalline form: Colorless amorphous

NMR analysis: 216)

Form: Free

Example 1041

Structure



Crystalline form: White powder

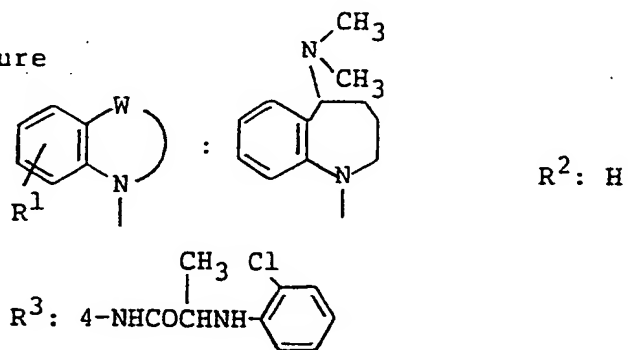
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 147 - 151°C

Form: Free

Example 1042

Structure



Crystalline form: White powder

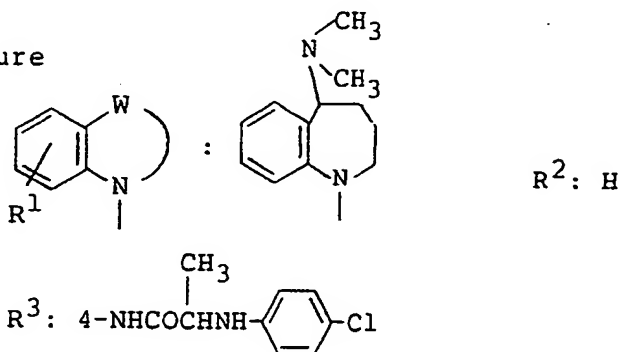
Recrystallization solvent: Methanol/n-hexane

Melting Point: 127 - 129°C

Form: Free

Example 1043

Structure



Crystalline form: White powder

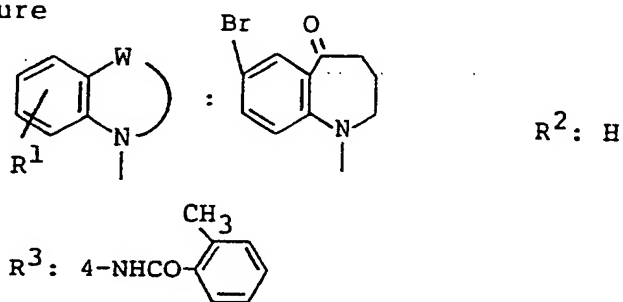
Recrystallization solvent: Methanol/n-hexane

Melting Point: 109 - 112°C

Form: Free

Example 1044

Structure



Crystalline form: White powder

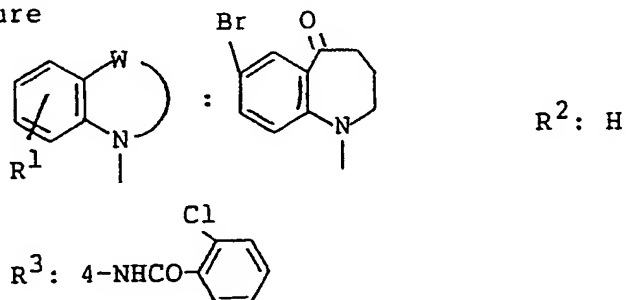
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 198 - 200°C

Form: Free

Example 1045

Structure



Crystalline form: White powder

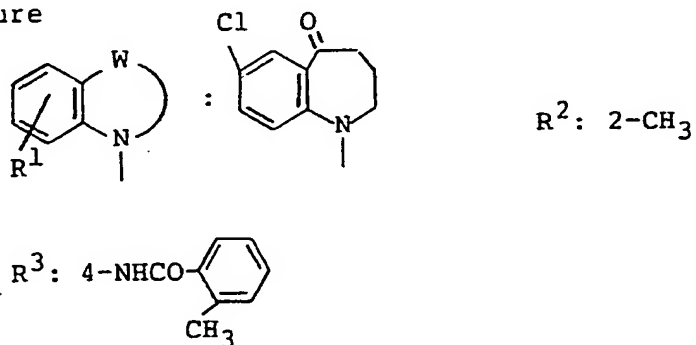
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 210 - 211°C

Form: Free

Example 1046

Structure



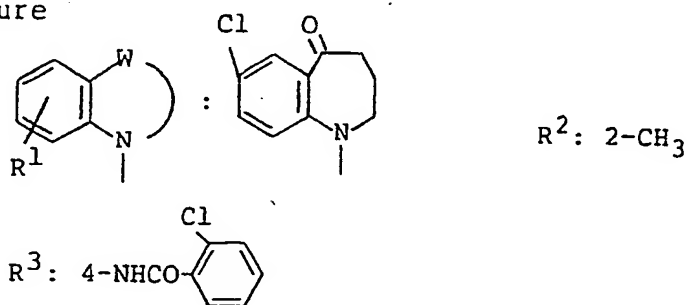
Crystalline form: Colorless amorphous

NMR analysis: 217)

Form: Free

Example 1047

Structure



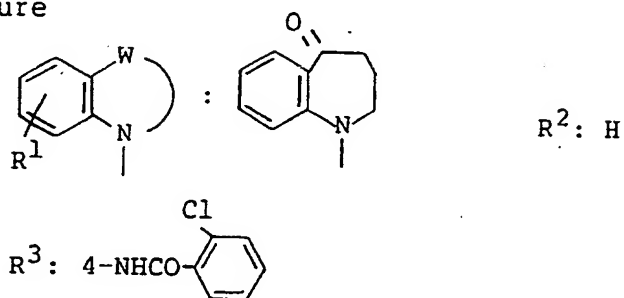
Crystalline form: Colorless amorphous

NMR analysis: 218)

Form: Free

Example 1048

Structure



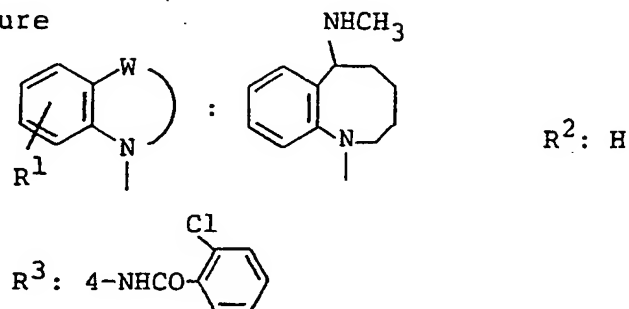
Crystalline form: Colorless amorphous

NMR analysis: 219)

Form: Free

Example 1049

Structure



Crystalline form: Colorless needles

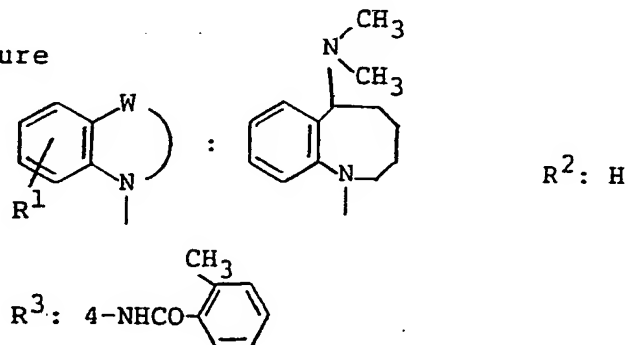
Recrystallization solvent: Ethanol

Melting Point: 243 - 243.5°C

Form: Free

Example 1050

Structure



Crystalline form: Colorless prisms

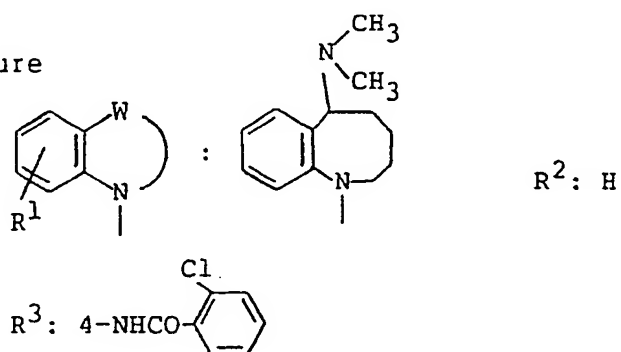
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 207 - 209°C

Form: Free

Example 1051

Structure



Crystalline form: Colorless needles

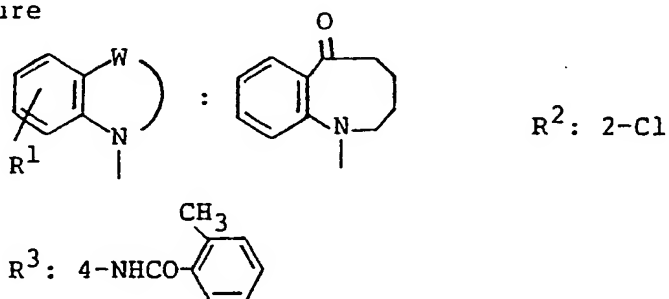
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 239 - 241°C

Form: Free

Example 1052

Structure



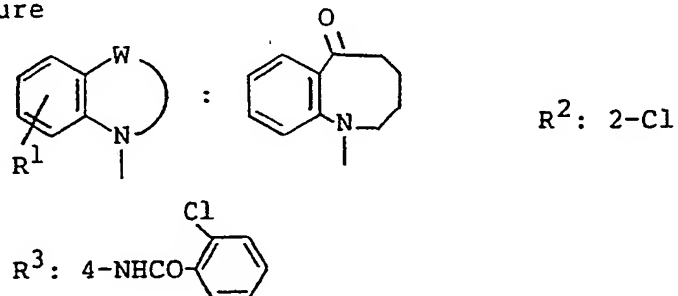
Crystalline form: Colorless amorphous

NMR analysis: 220)

Form: Free

Example 1053

Structure



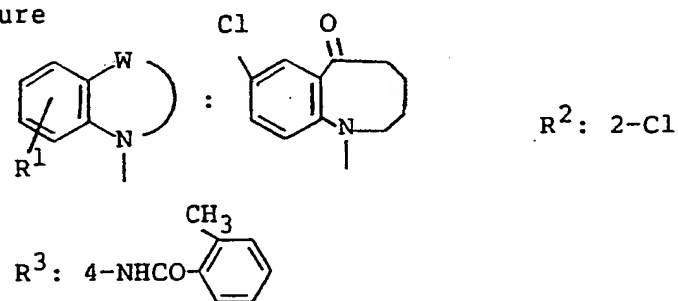
Crystalline form: Colorless amorphous

NMR analysis: 221)

Form: Free

Example 1054

Structure



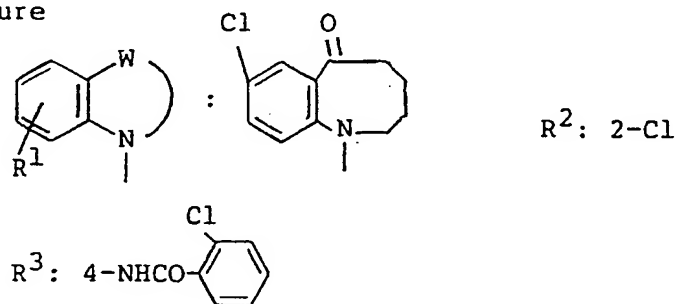
Crystalline form: Light yellow amorphous

NMR analysis: 222)

Form: Free

Example 1055

Structure



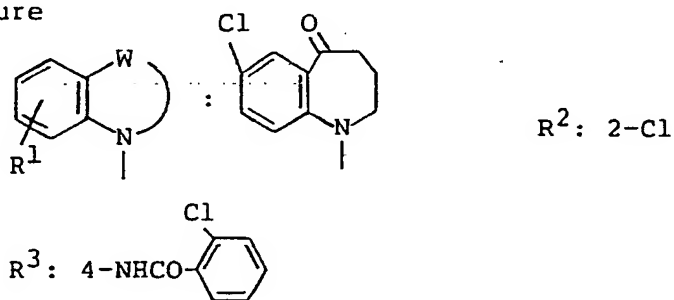
Crystalline form: Light yellow amorphous

NMR analysis: 223)

Form: Free

Example 1056

Structure



Crystalline form: White powder

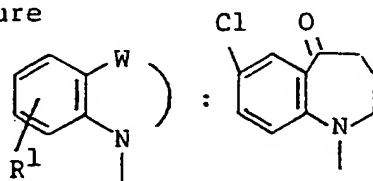
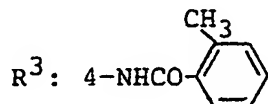
Recrystallization solvent: Diethyl ether/dichloromethane

Melting Point: 169.5 - 173°C

Form: Free

Example 1057

Structure

 R^2 : 2-Cl

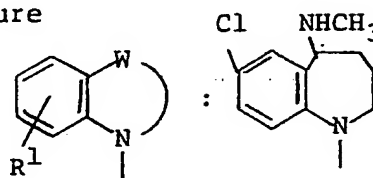
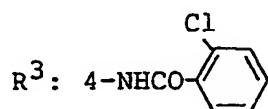
Crystalline form: Colorless amorphous

NMR analysis: 224)

Form: Free

Example 1058

Structure

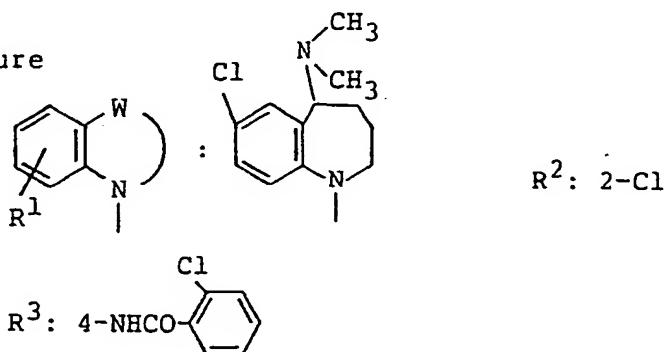
 R^2 : 2-Cl

Crystalline form: Colorless amorphous

NMR analysis: 225)

Example 1059

Structure



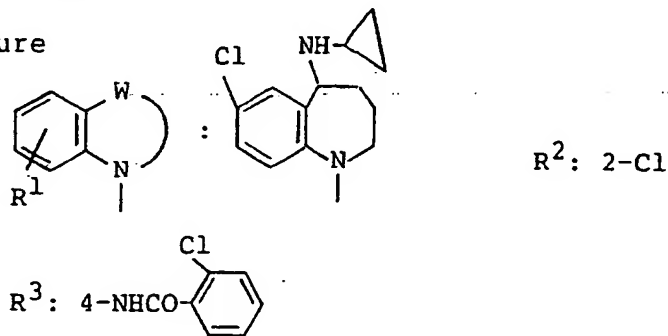
Crystalline form: Colorless amorphous

NMR analysis: 226)

Form: Free

Example 1060

Structure



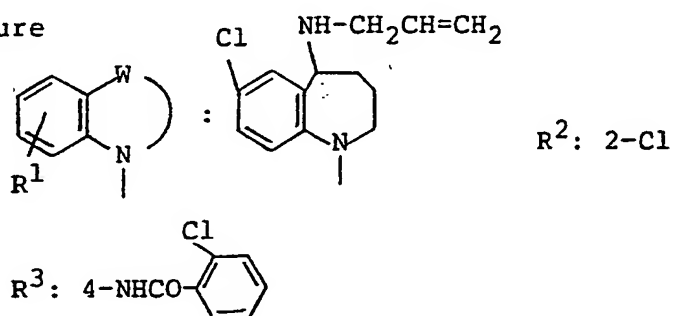
Crystalline form: Colorless amorphous

NMR analysis: 227)

Form: Free

Example 1061

Structure



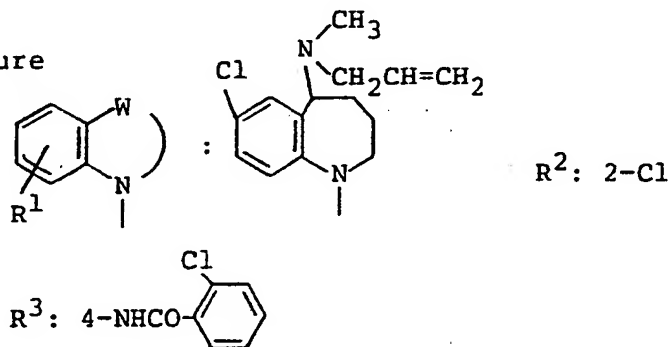
Crystalline form: Colorless amorphous

NMR analysis: 228)

Form: Free

Example 1062

Structure



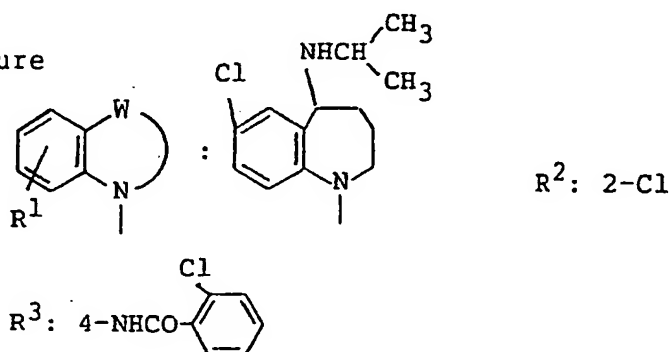
Crystalline form: Colorless amorphous

NMR analysis: 229)

Form: Free

Example 1063

Structure



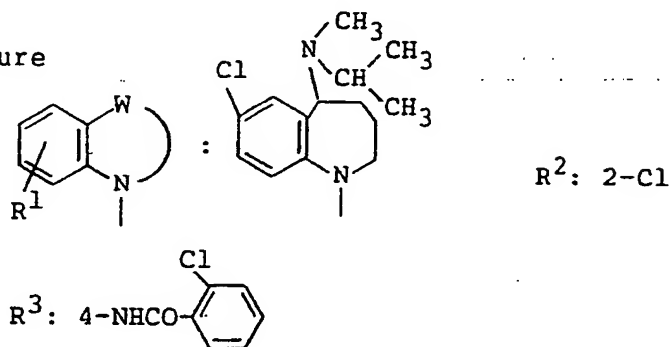
Crystalline form: Colorless amorphous

NMR analysis: 230)

Form: Free

Example 1064

Structure



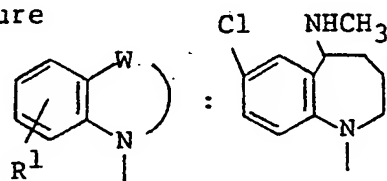
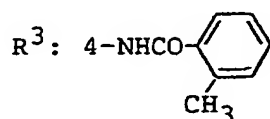
Crystalline form: Colorless amorphous

NMR analysis: 231)

Form: Free

Example 1065

Structure

 R^2 : 2-Cl

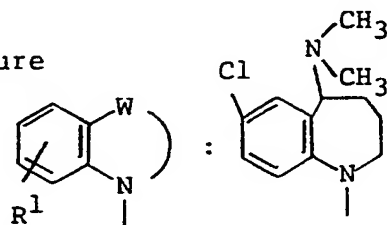
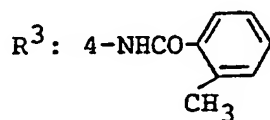
Crystalline form: Colorless amorphous

NMR analysis: 232)

Form: Free

Example 1066

Structure

 R^2 : 2-Cl

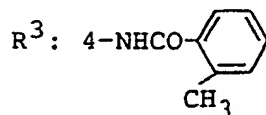
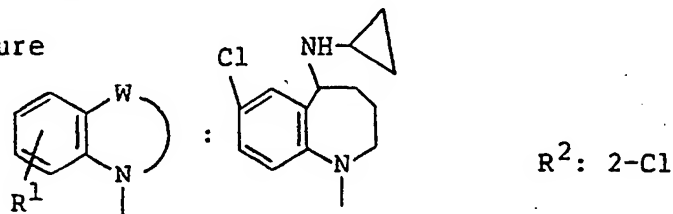
Crystalline form: Colorless amorphous

NMR analysis: 233)

Form: Free

Example 1067

Structure



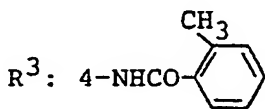
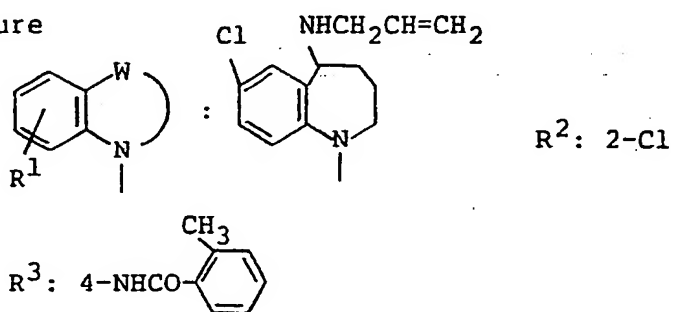
Crystalline form: Colorless amorphous

NMR analysis: 234)

Form: Free

Example 1068

Structure



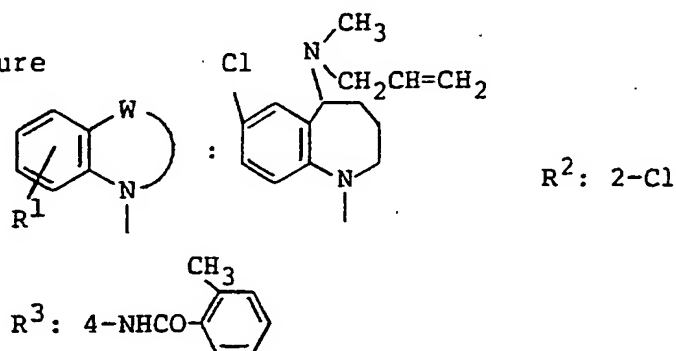
Crystalline form: Colorless amorphous

NMR analysis: 235)

Form: Free

Example 1069

Structure



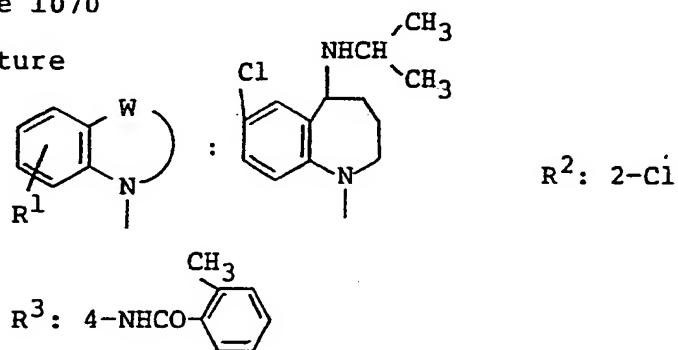
Crystalline form: Colorless amorphous

NMR analysis: 236)

Form: Free

Example 1070

Structure



Crystalline form: Colorless amorphous

NMR analysis: 237)

Form: Free

- 196) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.14 (2H, brs), 2.33 (3H, s), 2.46 (3H, s), 2.85 (2H, t, $J=6.1$ Hz), 4.83 (2H, brs), 6.64 (1H, d, $J=8.1$ Hz), 7.07 (1H, d, $J=8.0$ Hz), 7.21-7.48 (8H, m), 7.65 (1H, m), 7.74 (1H, brs)
- 197) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.12 (2H, brs), 2.33 (3H, s), 2.85 (2H, t, $J=6.2$ Hz), 2.88-5.28 (2H, m), 6.63 (1H, d, $J=8.1$ Hz), 7.06 (1H, dd, $J=1.7$ Hz, 8.1 Hz), 7.19-7.69 (9H, m), 8.26 (1H, brs)
- 198) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.49 (4H, m), 1.25-5.13 (9H, m), 2.33 (3H, s), 2.45 (3H, s), 6.53 (1H, m), 6.79 (1H, m), 7.07-7.42 (9H, m), 7.73 (1H, m)
- 199) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.04 (2H, brs), 2.29 (3H, s), 2.82 (2H, t, $J=5.9$ Hz), 2.85-5.29 (2H, m), 6.82-7.69 (10H, m), 8.31 (1H, brs)
- 200) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.05 (2H, brs), 2.29 (3H, s), 2.44 (3H, s), 2.79 (2H, t, $J=5.5$ Hz), 2.82-5.28 (2H, m), 6.82-8.12 (11H, m)
- 201) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.40-4.85 (11H, m), 2.51 (3H, s), 6.78-7.63 (10H, m), 8.64 (1H, brs)
- 202) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.40-4.85 (11H, m), 2.45 (3H, s), 2.50 (3H, s), 6.78-7.55 (10H, m), 8.10 (1H, brs)
- 203) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.49 (4H, m), 1.25-4.85 (9H, m), 2.28 (3H, s), 6.77-7.62 (10H, m), 8.64 (1H, brs)
- 204) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.48 (4H, m), 1.26-4.85 (9H, m), 2.29 (3H, s), 2.44 (3H, s), 6.78-7.58 (10H, m), 8.18 (1H, brs)

- 205) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.14 (6H, d, $J=6.3$ Hz), 1.52-2.20 (7H, m), 2.20-2.60 (1H, m), 2.64-3.66 (10H, m), 4.00-4.50 (4H, m), 4.50-5.23 (2H, m), 6.57-7.90 (11H, m), 8.10-8.30 (1H, m), 9.97 (1H, s)
- 206) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.24-2.08 (4H, m), 2.08-2.26 (3H, m), 2.26-3.16 (4H, m), 3.47-4.03 (4H, m), 4.18-4.92 (1H, m), 6.40-7.94 (10H, m), 8.45-9.03 (1H, m)
- 207) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.26-2.10 (4H, m), 2.10-2.28 (3H, m), 2.28-3.20 (1H, m), 3.43-4.06 (4H, m); 4.20-4.93 (1H, m), 6.40-8.00 (10H, m), 8.78-9.30 (1H, m)
- 208) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-1.98 (4H, m), 1.98-3.10 (7H, m), 3.30-3.90 (4H, m), 3.90-5.10 (1H, m), 6.45-8.25 (12H, m)
- 209) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.06-1.94 (4H, m), 1.94-3.19 (10H, m), 3.19-3.90 (4H, m), 3.90-5.10 (1H, m), 6.44-8.60 (11H, m)
- 210) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.06-1.97 (4H, m), 1.97-3.20 (7H, m), 3.20-3.92 (4H, m), 3.92-5.10 (1H, m), 6.44-8.55 (11H, m)
- 211) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.07-1.98 (4H, m), 1.98-3.10 (10H, m), 3.37-5.20 (8H, m), 6.44-6.86 (3H, m), 6.97-7.60 (6H, m), 8.13 (1H, s), 8.19-8.38 (1H, m)
- 212) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.08-1.99 (4H, m), 1.99-3.13 (7H, m), 3.33-5.14 (8H, m), 6.40-6.90 (3H, m),

- 6.95-7.56 (5H, m), 7.63-7.87 (1H, m), 8.17-8.37 (1H, m), 8.60 (1H, s)
- 213) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.64 (4H, m), 0.70-3.42 (9H, m), 3.42-5.10 (5H, m), 6.40-8.70 (11H, m)
- 214) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.76 (4H, m), 0.80-3.43 (6H, m), 3.50-5.00 (5H, m), 6.40-9.04 (11H, m)
- 215) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-3.25 (14H, m), 3.55-5.06 (2H, m), 6.43-7.00 (2H, m), 7.00-7.71 (8H, m), 7.91-8.45 (1H, m)
- 216) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.11-3.20 (17H, m), 3.28-5.12 (2H, m), 6.41-7.01 (2H, m), 7.02-7.63 (8H, m), 7.76-8.21 (1H, m)
- 217) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.92-2.29 (2H, m), 2.36 (3H, s), 2.45 (3H, s), 2.84 (2H, t, $J=6.3$ Hz), 3.32-4.64 (2H, m), 6.40-8.10 (11H, m)
- 218) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.92-2.25 (2H, m), 2.34 (3H, s), 2.83 (2H, t, $J=6.3$ Hz), 3.21-4.52 (2H, m), 6.39-7.97 (10H, m), 8.43 (1H, brs)
- 219) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.7-2.15 (4H, m), 2.5-5.2 (4H, m), 6.75-6.9 (1H, m), 7.27-7.6 (9H, m), 7.65-7.85 (1H, m), 7.9-8.15 (2H, m)
- 220) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.1 (4H, m), 2.44 (3H, s), 2.8-4.5 (4H, m), 6.75-8.0 (12H, m)
- 221) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.3 (4H, m), 2.7-4.8 (4H, m), 6.75-8.4 (12H, m)
- 222) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.45-2.15 (4H, m), 2.45-2.55

- (3H, m), 2.85-4.6 (4H, m), 6.8-8.25 (11H, m)
- 223) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.5-2.2 (4H, m), 2.8-4.7 (4H, m), 6.8-8.4 (11H, m)
- 224) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.75-2.25 (2H, m), 2.30-2.70 (3H, m), 2.70-2.95 (2H, m), 3.20-5.10 (2H, m), 6.70-8.40 (11H, m)
- 225) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.60 (8H, m), 2.60-5.10 (3H, m), 6.80-7.90 (10H, m), 8.20-8.60 (1H, m)
- 226) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.60 (10H, m), 2.60-5.10 (3H, m), 6.80-8.15 (11H, m)
- 227) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.70 (4H, m), 1.20-2.45 (6H, m), 2.60-5.10 (3H, m), 6.80-7.95 (10H, m), 8.15-8.50 (1H, m)
- 228) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.40 (5H, m), 2.60-5.35 (7H, m), 5.80-6.15 (1H, m), 6.75-7.95 (10H, m), 8.20-8.70 (1H, m)
- 229) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.55 (7H, m), 2.60-5.35 (7H, m), 5.85-6.05 (1H, m), 6.70-7.10 (2H, m), 7.10-7.90 (8H, m), 8.15-8.60 (1H, m)
- 230) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.00-1.20 (6H, m), 1.00-2.40 (5H, m), 2.60-5.10 (4H, m), 6.80-8.00 (10H, m), 8.15-8.65 (1H, m)
- 231) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.80-2.50 (13H, m), 2.60-5.10 (4H, m), 6.70-8.85 (10H, m), 8.25-8.60 (1H, m)
- 232) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.30-2.60 (11H, m), 2.60-5.10 (3H, m), 6.80-8.15 (11H, m)

- 233) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.50 (13H, m), 2.50-5.10 (3H, m), 6.75-8.40 (11H, m)
- 234) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.30-0.65 (4H, m), 1.20-2.30 (6H, m), 2.35-2.55 (3H, m), 2.60-5.10 (3H, m), 6.75-8.35 (11H, m)
- 235) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.60 (8H, m), 2.60-5.40 (7H, m), 5.80-6.15 (1H, m), 6.80-8.20 (11H, m)
- 236) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-2.60 (10H, m), 2.60-5.40 (7H, m), 5.75-6.10 (1H, m), 6.75-7.10 (2H, m), 7.10-8.40 (9H, m)
- 237) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.95-1.20 (6H, m), 0.95-2.25 (5H, m), 2.40-2.60 (3H, m), 2.60-5.10 (4H, m), 6.75-7.05 (2H, m), 7.10-8.30 (9H, m)

Reference Example 22

Using the suitable starting materials, the following compounds are obtained in the same manner as in Reference Example 1.

8-Chloro-6-oxo-1-(4-nitrobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine, yellow prisms

$^1\text{H-NMR}$ ($\text{DMSO}-d_6$) δ ; 1.3-2.2 (4H, m), 2.6-5.0 (4H, m), 7.05-8.5 (7H, m)

5-Oxo-7-methyl-1-(2-chloro-4-nitrobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.71-2.32 (2H, m), 2.29 (3H, s), 2.86 (2H, t, $J=6.3$ Hz), 3.10-5.30 (2H, m), 6.84-8.38 (6H, m)

5-Oxo-7-methyl-1-(3-methoxy-4-nitrobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine, light yellow amorphous

¹H-NMR (CDCl₃) δ ; 2.17 (2H, brs), 2.34 (3H, s),
2.84 (2H, t, J=6.0 Hz), 3.10-5.29 (2H, m), 3.77 (3H, s),
6.67 (1H, d, J=7.9 Hz), 6.85 (2H, m), 7.10 (1H, d, J=8.0
Hz), 7.57-7.65 (2H, m)

5-Oxo-7-dimethylamino-1-(2-chloro-4-nitrobenzoyl)-
2,3,4,5-tetrahydro-1H-benzazepine, yellow powder

¹H-NMR (CDCl₃) δ ; 1.66-2.38 (2H, m), 2.65-2.88
(2H, m), 2.92 (6H, s), 3.08-3.64, 4.58-5.01 (total 2H, m),
6.49 (1H, dd, J=3.1, 8.7 Hz), 6.82 (1H, d, J=8.7 Hz), 6.90
(1H, d, J=3.1 Hz), 7.02-7.37 (1H, m), 7.94 (1H, dd, J=1.9,
8.4 Hz), 8.08 (1H, d, J=1.9 Hz)

Reference Example 23

Using the suitable starting materials, the
following compounds are obtained in the same manner as in
Reference Example 2.

8-Chloro-6-oxo-1-(4-aminobenzoyl)-1,2,3,4,5,6-
hexahydrobenzazocine, light yellow amorphous

¹H-NMR (CDCl₃) δ ; 1.7-2.2 (4H, m), 2.3-4.8 (6H,
m), 6.4-6.6 (2H, m), 6.74 (1H, d, J=8.5 Hz), 7.1-7.4 (3H,
m), 7.99 (1H, d, J=2.6 Hz)

8-Methyl-6-oxo-(2-chloro-4-aminobenzoyl)-
1,2,3,4,5,6-hexahydrobenzazocine, colorless amorphous

¹H-NMR (CDCl₃) δ ; 1.4-2.1 (4H, m), 2.15-2.6 (3H,
m), 2.7-4.4 (6H, m), 6.15-6.35 (1H, m), 6.51 (1H, s), 6.6-
6.85 (1H, m), 6.9-7.25 (2H, m), 7.72 (1H, s)

8-Methoxy-6-oxo-(2-chloro-4-aminobenzoyl)-

1,2,3,4,5,6-hexahydrobenzazocine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.4-2.2 (4H, m), 2.7-5.0 (9H, m), 6.25 (1H, dd, $J=8.3$ Hz, 2.2 Hz), 6.51 (1H, d, $J=2.2$ Hz); 6.66 (1H, d, $J=8.3$ Hz), 6.88 (1H, dd, $J=8.6$ Hz, 3.0 Hz), 7.23 (1H, d, $J=8.6$ Hz), 7.43 (1H, d, $J=3.0$ Hz)

5-Oxo-7-chloro-1-(2-methoxy-4-aminobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine, colorless particles
(recrystallized from methanol/diethyl ether), m.p. 206 - 208°C

5-Oxo-7-methyl-1-(2-chloro-4-aminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 2.09 (2H, brs), 2.29 (3H, s), 3.10-5.00 (2H, m), 3.78 (2H, brs), 6.34-7.54 (6H, m)

5-Oxo-7-methyl-1-(3-methoxy-4-aminobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine, light yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 2.12 (2H, brs), 2.32 (3H, s), 2.85 (2H, t, $J=5.9$ Hz), 3.30-5.00 (2H, m), 3.65 (3H, s), 3.98 (2H, brs), 6.40 (1H, d, $J=8.1$ Hz), 6.64-6.76 (3H, m), 7.06 (1H, dd, $J=1.6, 8.1$ Hz), 7.63 (1H, d, $J=2.0$ Hz)

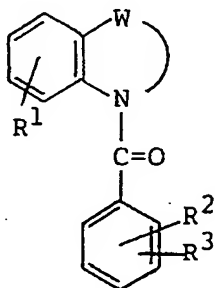
5-Oxo-7-dimethylamino-1-(2-chloro-4-aminobenzoyl)-

2,3,4,5-tetrahydro-1H-benzazepine, yellow amorphous

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.60-2.32 (2H, m), 2.67-5.13 (4H, m), 2.92 (6H, s), 3.75 (2H, s), 6.31 (1H, dd, $J=2.1, 8.3$ Hz), 6.46 (1H, d, $J=2.1$ Hz), 6.48 (1H, dd, $J=3.1, 8.7$ Hz), 6.66-6.89 (2H, m), 6.95 (1H, d, $J=3.1$ Hz)

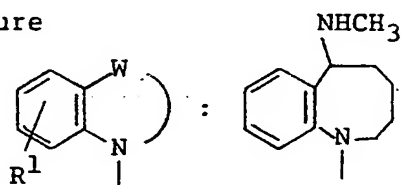
Using the suitable starting materials, the compounds of the following Table 9 are obtained in the same manner as in above Examples 1 and 382.

Table 9

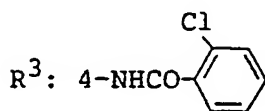


Example 1071

Structure



R^2 : 2-Cl



Crystalline form: Colorless prisms

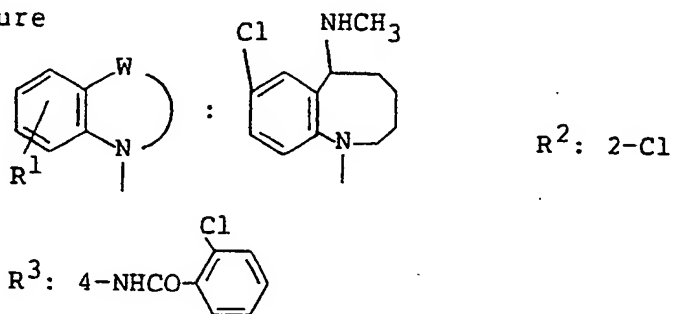
Recrystallization solvent: Ethanol

Melting Point: 227 - 230°C

Form: Free

Example 1072

Structure



Crystalline form: Colorless needles

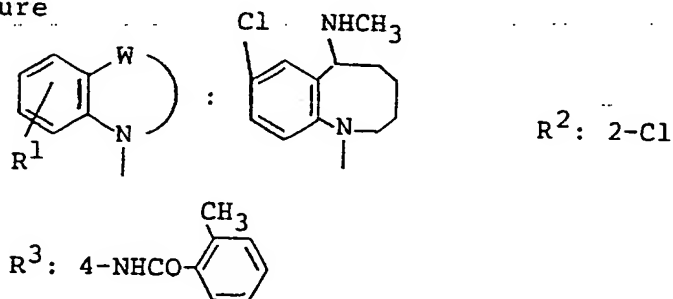
Recrystallization solvent: Ethanol/petroleum ether

Melting Point: 216 - 218°C

Form: Free

Example 1073

Structure



Crystalline form: Colorless prisms

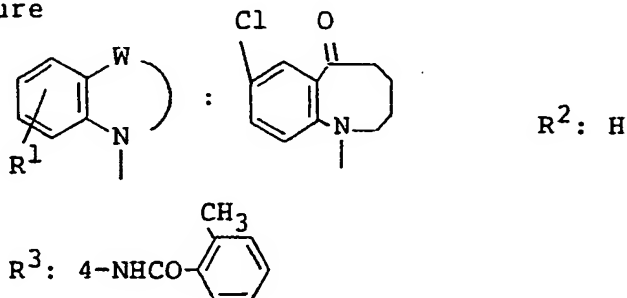
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 227 - 228°C

Form: Free

Example 1074

Structure



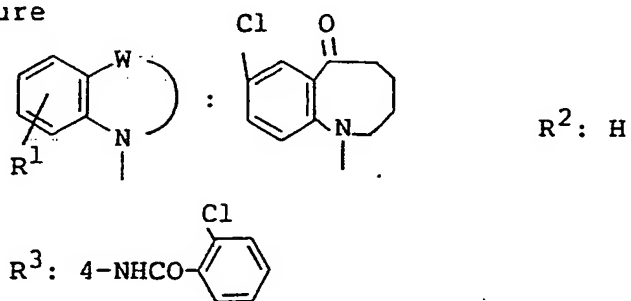
Crystalline form: White powder

NMR analysis: 238)

Form: Free

Example 1075

Structure



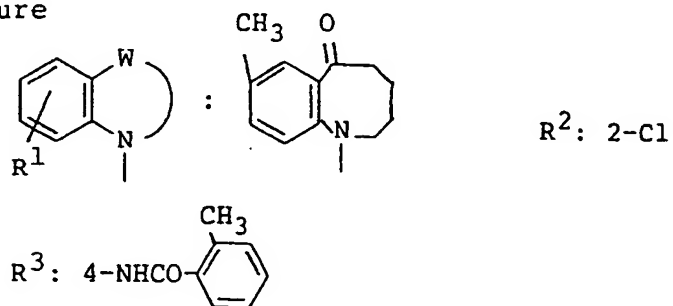
Crystalline form: White powder

NMR analysis: 239)

Form: Free

Example 1076

Structure



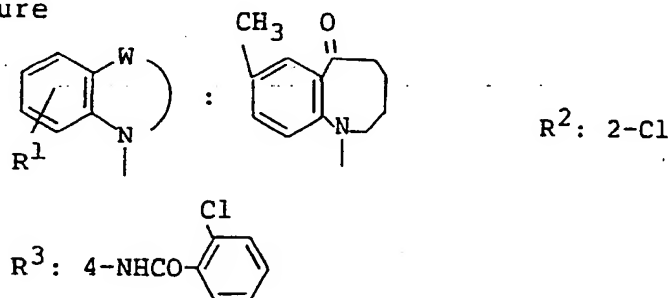
Crystalline form: Light yellow amorphous

NMR analysis: 240)

Form: Free

Example 1077

Structure



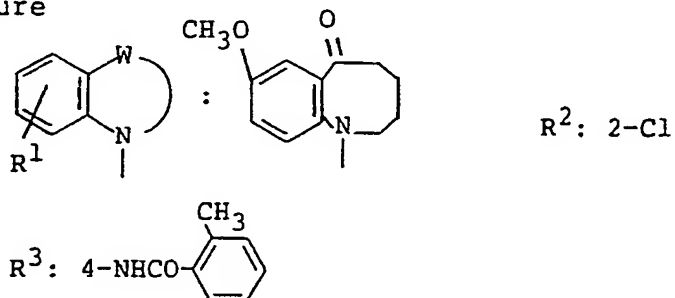
Crystalline form: Light yellow amorphous

NMR analysis: 241)

Form: Free

Example 1078

Structure



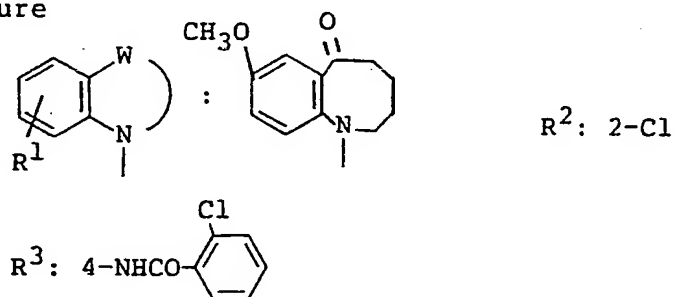
Crystalline form: Colorless amorphous

NMR analysis: 242)

Form: Free

Example 1079

Structure



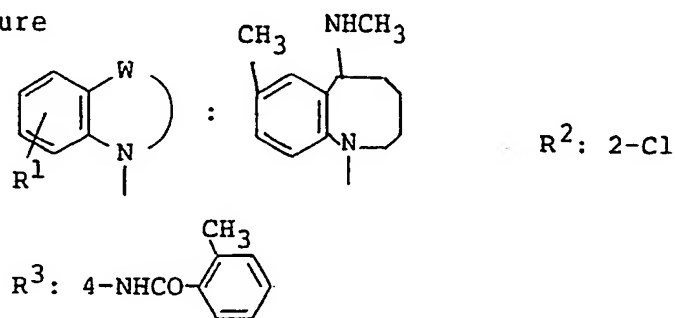
Crystalline form: Colorless amorphous

NMR analysis: 243)

Form: Free

Example 1080

Structure



Crystalline form: Light yellow powder

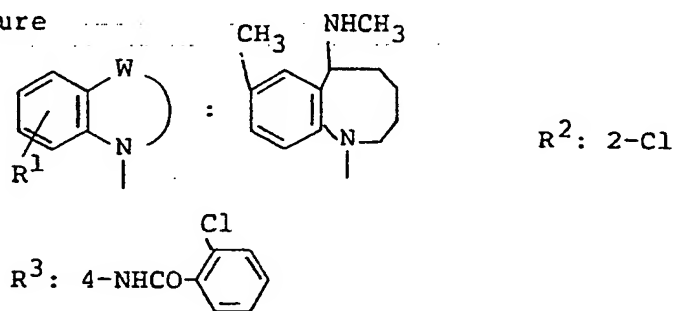
Recrystallization solvent: Ethyl acetate/diethyl ether

Melting Point: 179 - 181°C

Form: Free

Example 1081

Structure



Crystalline form: White powder

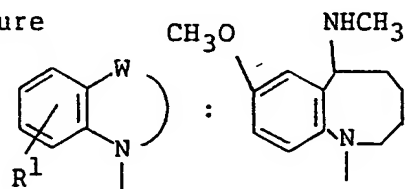
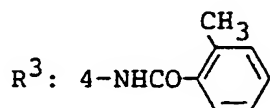
Recrystallization solvent: Ethyl acetate/diethyl ether

Melting Point: 213 - 216°C

Form: Free

Example 1082

Structure

R²: 2-Cl

Crystalline form: Light yellow powder

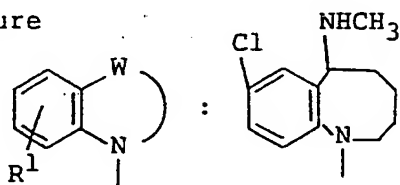
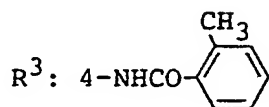
Recrystallization solvent: Ethyl acetate/diethyl ether

Melting Point: 185 - 187°C

Form: Free

Example 1083

Structure

R²: H

Crystalline form: Colorless prisms

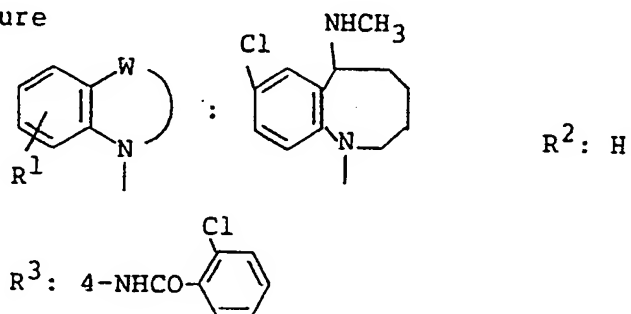
Recrystallization solvent: Ethanol

Melting Point: 249 - 251°C

Form: Free

Example 1084

Structure



Crystalline form: Colorless needles

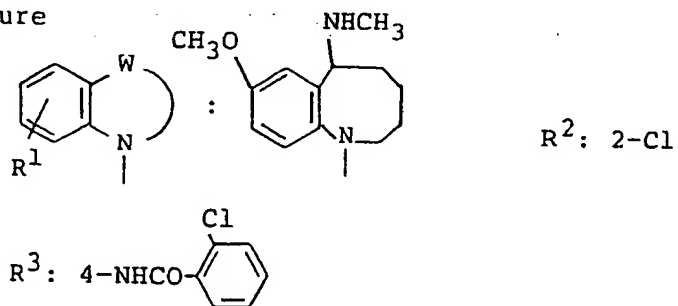
Recrystallization solvent: Ethanol

Melting Point: 239 - 241°C

Form: Free

Example 1085

Structure



Crystalline form: White powder

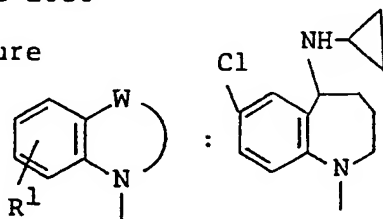
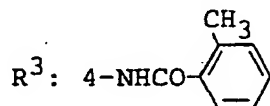
Recrystallization solvent: Ethyl acetate/diethyl ether

Melting Point: 208 - 210°C

Form: Free

Example 1086

Structure

 $R^2: 2\text{-CH}_3$ 

Crystalline form: White powder

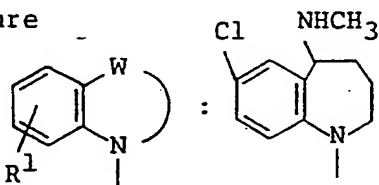
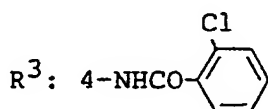
Recrystallization solvent: Methanol/n-hexane

Melting Point: 178 - 180.5°C

Form: Free

Example 1087

Structure

 $R^2: 2\text{-CH}_3$ 

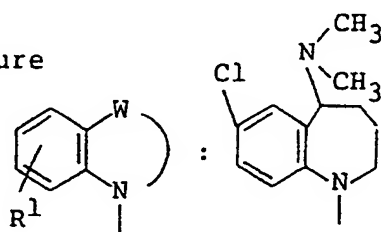
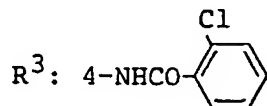
Crystalline form: Colorless amorphous

NMR analysis: 244)

Form: Free

Example 1088

Structure

R²: 2-CH₃

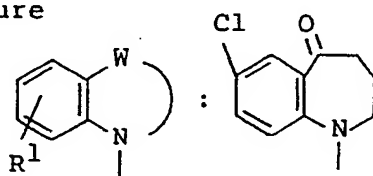
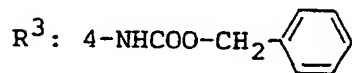
Crystalline form: Colorless amorphous

NMR analysis: 245)

Form: Free

Example 1089

Structure

R²: 2-OCH₃

Crystalline form: White powder

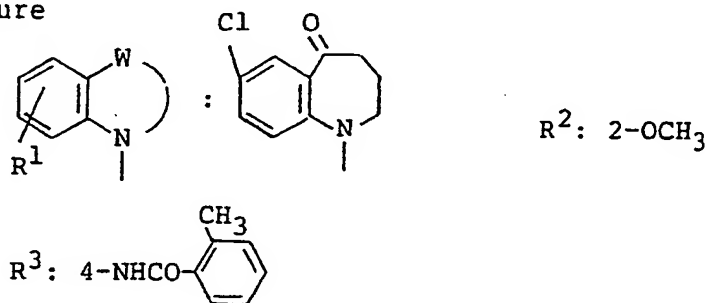
Recrystallization solvent: Methanol/diethyl ether

NMR analysis: 246)

Form: Free

Example 1090

Structure



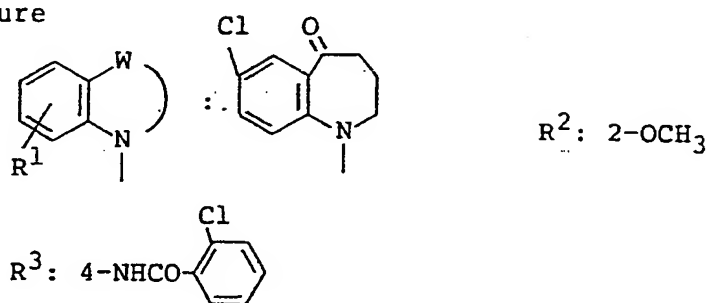
Crystalline form: Colorless amorphous

NMR analysis: 247)

Form: Free

Example 1091

Structure



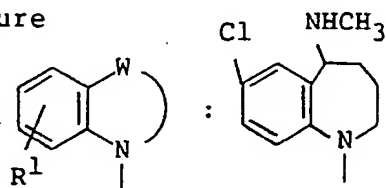
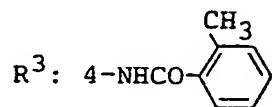
Crystalline form: Colorless amorphous

NMR analysis: 248)

Form: Free

Example 1092

Structure

 $R^2: 2\text{-OCH}_3$ 

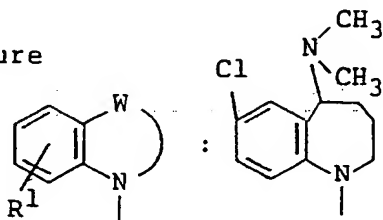
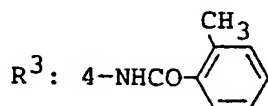
Crystalline form: Colorless amorphous

NMR analysis: 249)

Form: Free

Example 1093

Structure

 $R^2: 2\text{-OCH}_3$ 

Crystalline form: White powder

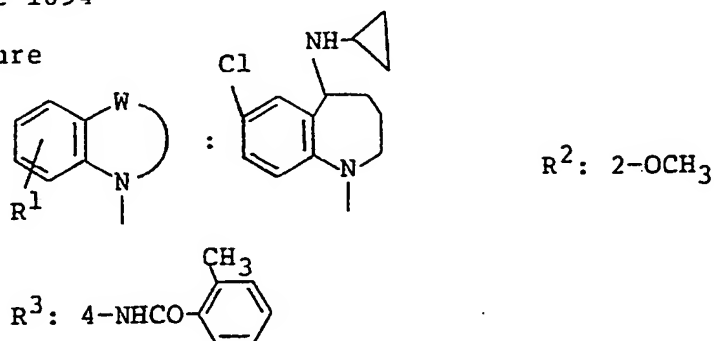
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 205 - 206°C

Form: Free

Example 1094

Structure



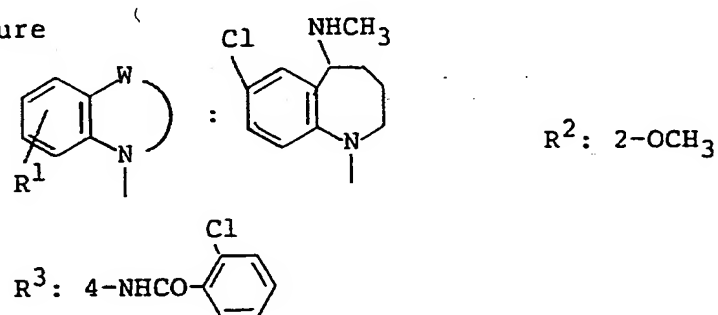
Crystalline form: Colorless amorphous

NMR analysis: 250)

Form: Free

Example 1095

Structure



Crystalline form: White powder

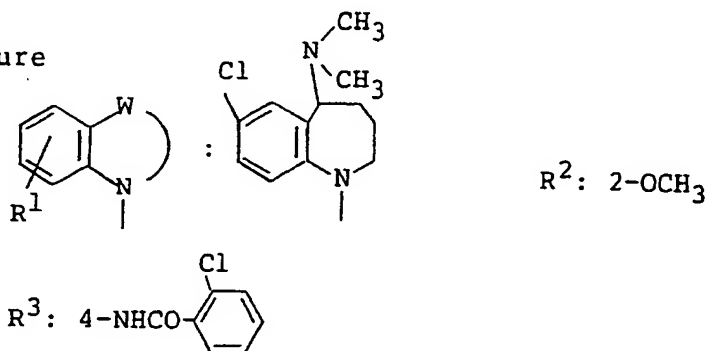
Recrystallization solvent: Methanol/n-hexane

Melting Point: 172.5 - 174°C

Form: Free

Example 1096

Structure



Crystalline form: White powder

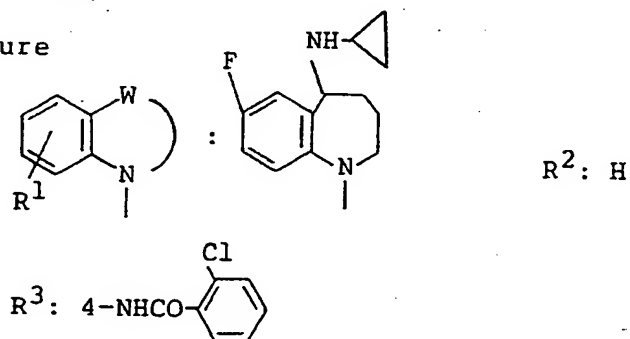
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 215 - 216.5°C

Form: Free

Example 1097

Structure



Crystalline form: White powder

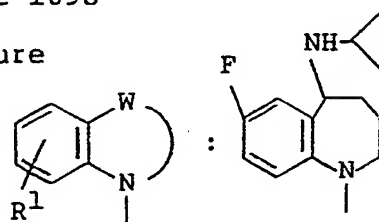
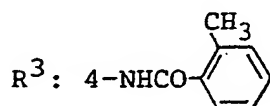
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 133 - 136°C

Form: Free

Example 1098

Structure

 R^2 : 2-Cl

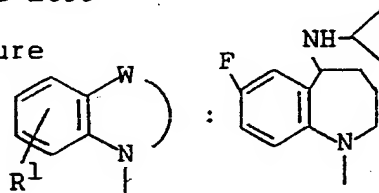
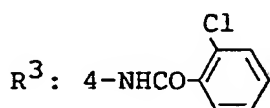
Crystalline form: Colorless amorphous

NMR analysis: 251)

Form: Free

Example 1099

Structure

 R^2 : 2-Cl

Crystalline form: White powder

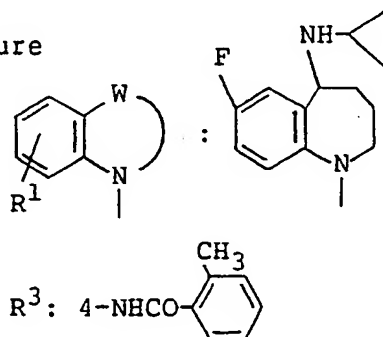
Recrystallization solvent: Methanol/n-hexane

Melting Point: 179 - 180°C

Form: Free

Example 1100

Structure



Crystalline form: White powder

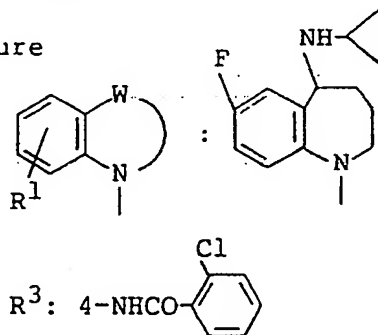
Recrystallization solvent: Methanol/n-hexane

Melting Point: 167.5 - 169.5°C

Form: Free

Example 1101

Structure



Crystalline form: White powder

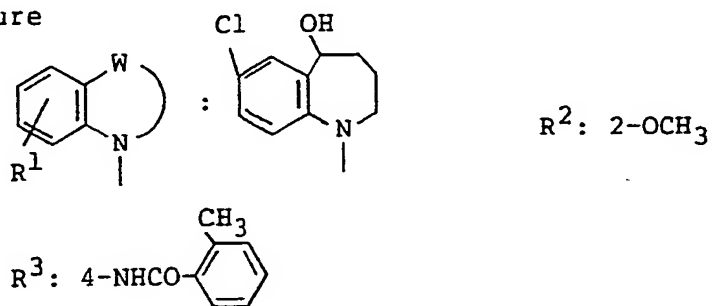
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 176 - 178°C

Form: Free

Example 1102

Structure



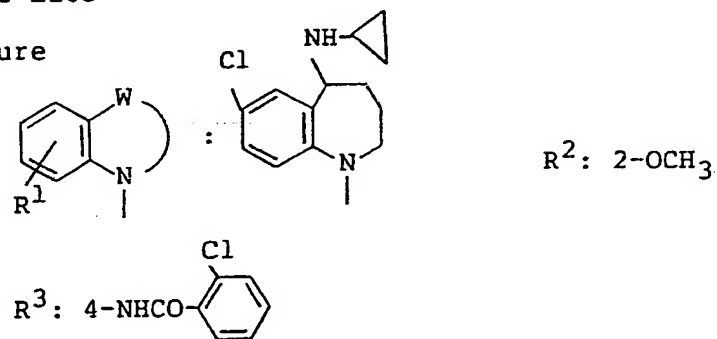
Crystalline form: Colorless amorphous

NMR analysis: 252)

Form: Free

Example 1103

Structure



Crystalline form: White powder

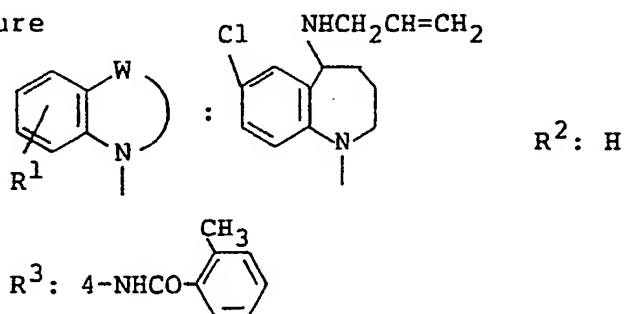
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 185 - 188°C

Form: Free

Example 1104

Structure



Crystalline form: White powder

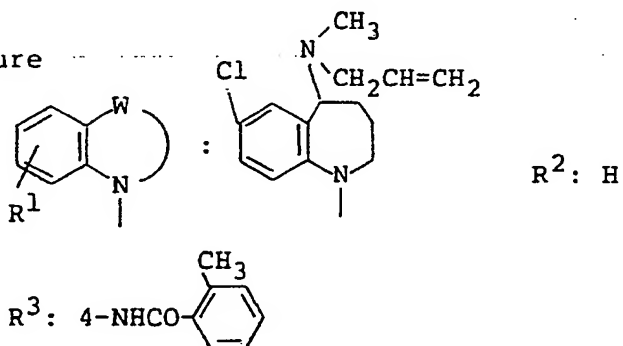
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 180 - 181.5°C

Form: Free

Example 1105

Structure



Crystalline form: White powder

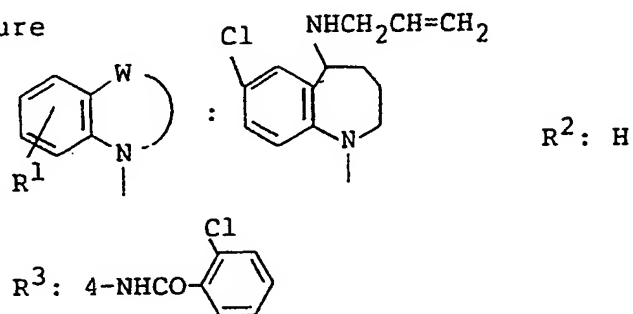
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 181 - 184°C

Form: Free

Example 1106

Structure



Crystalline form: White powder

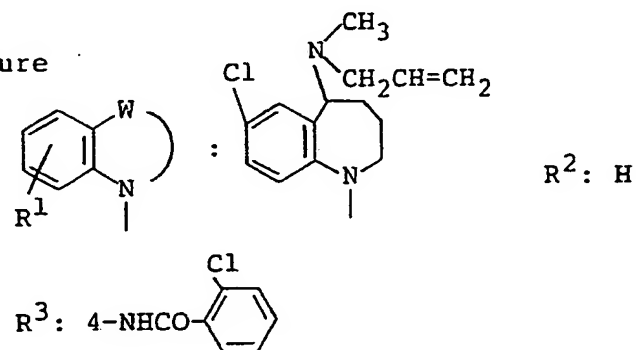
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 186.5 - 187°C

Form: Free

Example 1107

Structure



Crystalline form: White powder

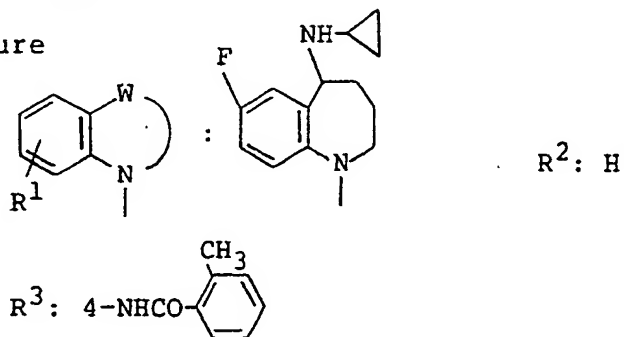
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 183 - 184°C

Form: Free

Example 1108

Structure



Crystalline form: White powder

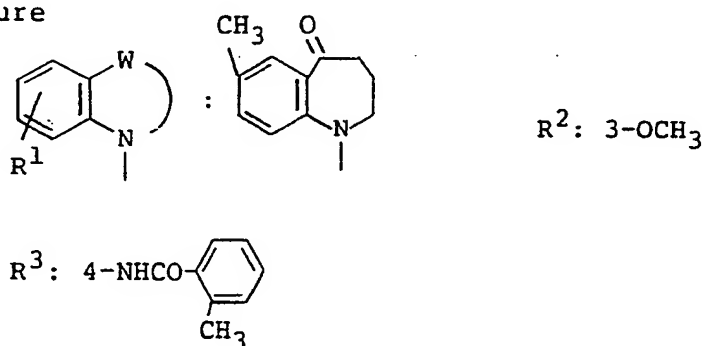
Recrystallization solvent: Methanol/diethyl ether

Melting Point: 151 - 153°C

Form: Free

Example 1109

Structure



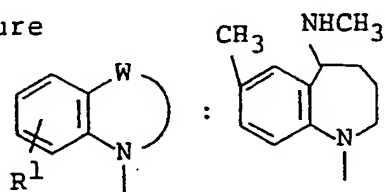
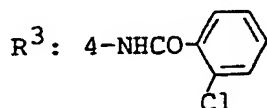
Crystalline form: Colorless amorphous

NMR analysis: 253)

Form: Free

Example 1110

Structure

 $R^2: H$ 

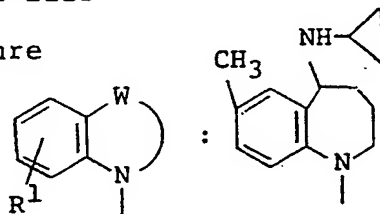
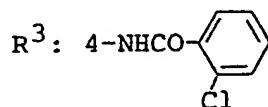
Crystalline form: Colorless amorphous

NMR analysis: 254)

Form: Free

Example 1111

Structure

 $R^2: H$ 

Crystalline form: White needles

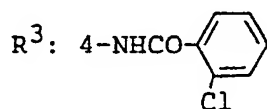
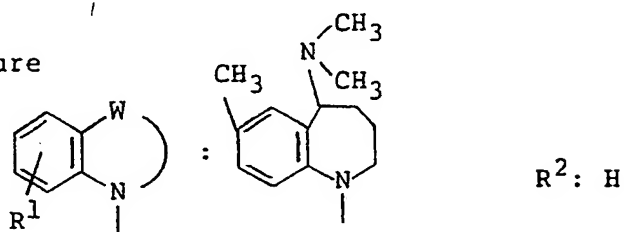
Recrystallization solvent: Ethanol/n-hexane

Melting Point: 191 - 195°C

Form: Free

Example 1112

Structure



Crystalline form: White powder

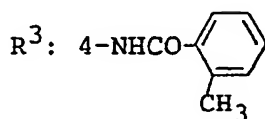
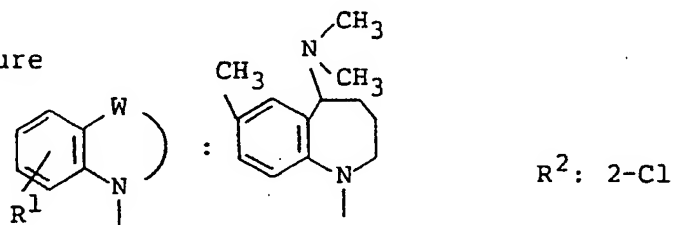
Recrystallization solvent: Diethyl ether/n-hexane

Melting Point: 227 - 230°C

Form: Free

Example 1113

Structure



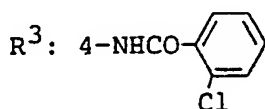
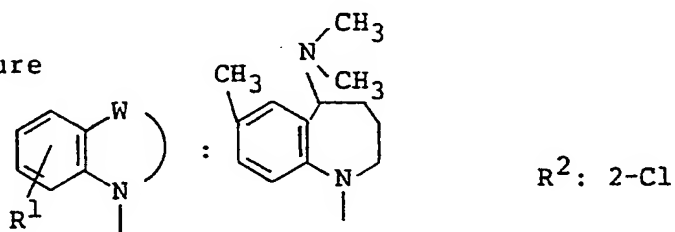
Crystalline form: Colorless amorphous

NMR analysis: 289)

Form: Free

Example 1114

Structure

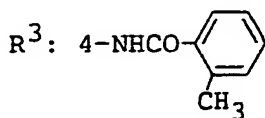
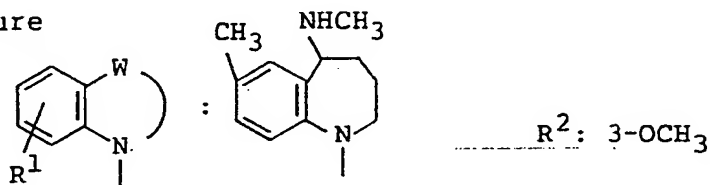


Crystalline form: Light yellow amorphous

NMR analysis: 255)

Example 1115

Structure



Crystalline form: White powder

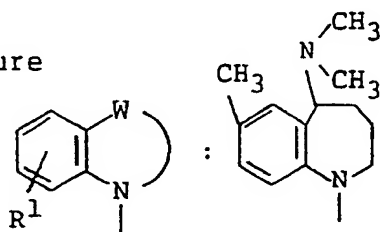
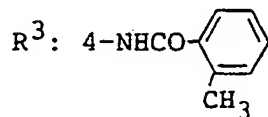
Recrystallization solvent: Diethyl ether/n-hexane

Melting Point: 172 - 174°C

Form: Free

Example 1116

Structure

 $R^2: 3\text{-OCH}_3$ 

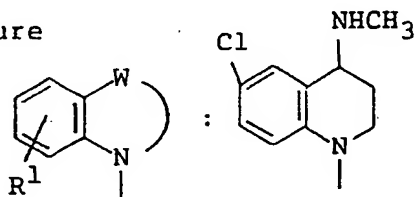
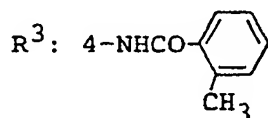
Crystalline form: Colorless amorphous

NMR analysis: 305)

Form: Free

Example 1117

Structure

 $R^2: 2\text{-CH}_3$ 

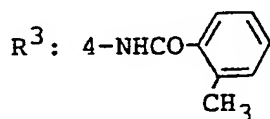
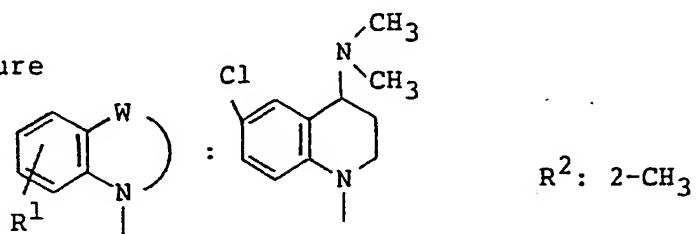
Crystalline form: Colorless amorphous

NMR analysis: 290)

Form: Free

Example 1118

Structure



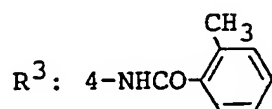
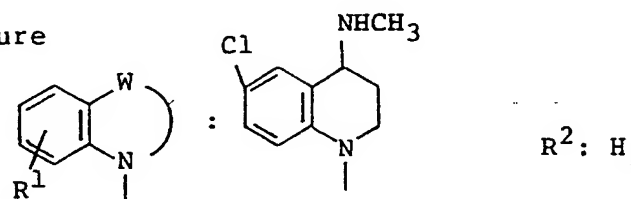
Crystalline form: Colorless amorphous

NMR analysis: 291)

Form: Free

Example 1119

Structure



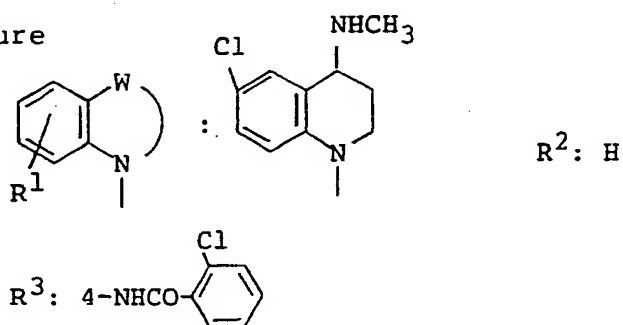
Crystalline form: Colorless amorphous

NMR analysis: 264)

Form: Free

Example 1120

Structure



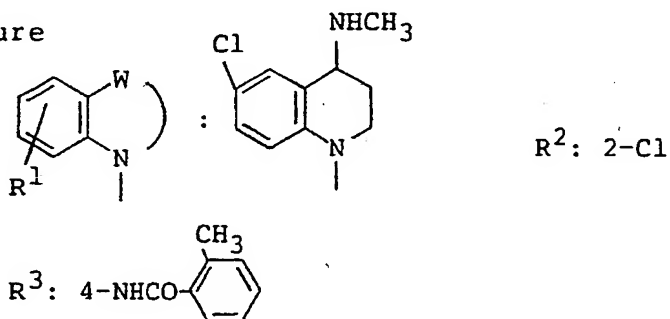
Crystalline form: Colorless amorphous

NMR analysis: 265)

Form: Free

Example 1121

Structure



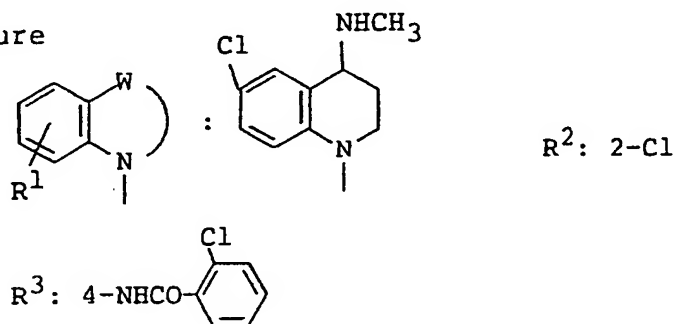
Crystalline form: Colorless amorphous

NMR analysis: 266)

Form: Free

Example 1122

Structure



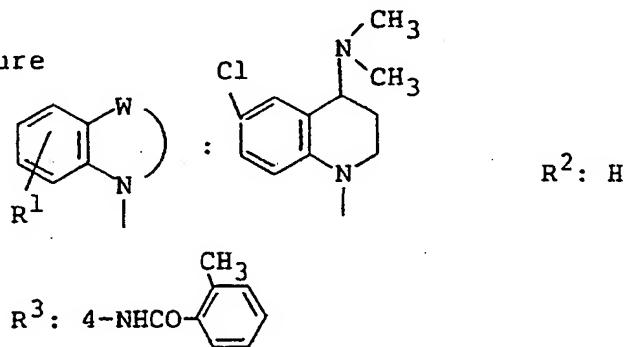
Crystalline form: Colorless amorphous

NMR analysis: 267)

Form: Free

Example 1123

Structure



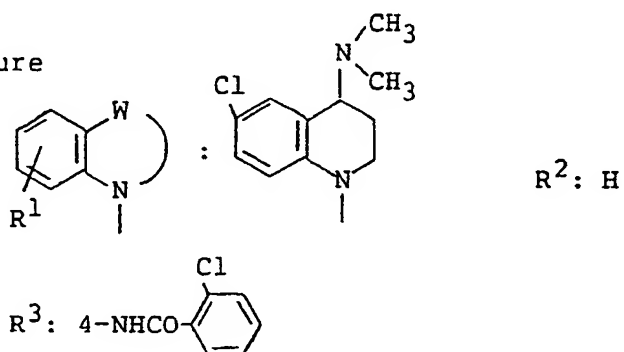
Crystalline form: Colorless amorphous

NMR analysis: 268)

Form: Free

Example 1124

Structure



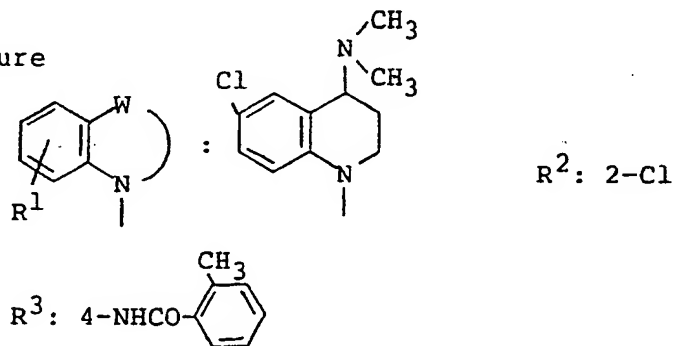
Crystalline form: Colorless amorphous

NMR analysis: 269)

Form: Free

Example 1125

Structure



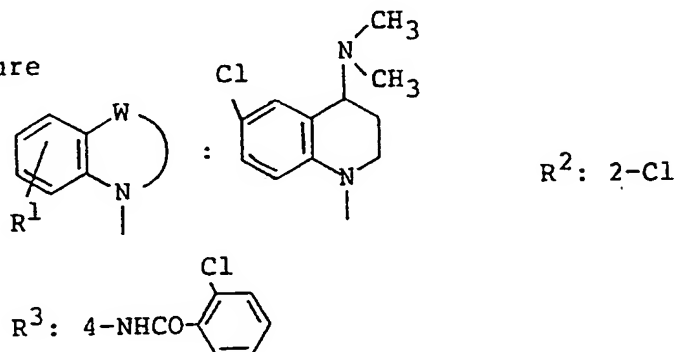
Crystalline form: Colorless amorphous

NMR analysis: 270)

Form: Free

Example 1126

Structure



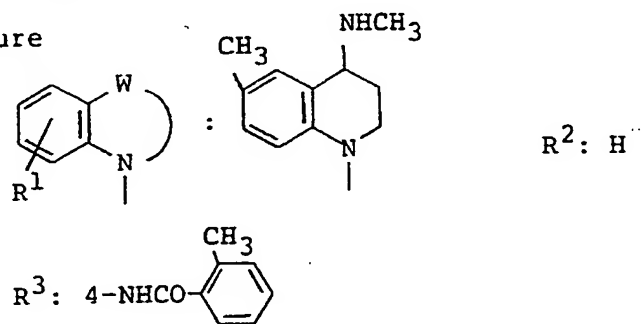
Crystalline form: Colorless amorphous

NMR analysis: 271)

Form: Free

Example 1127

Structure



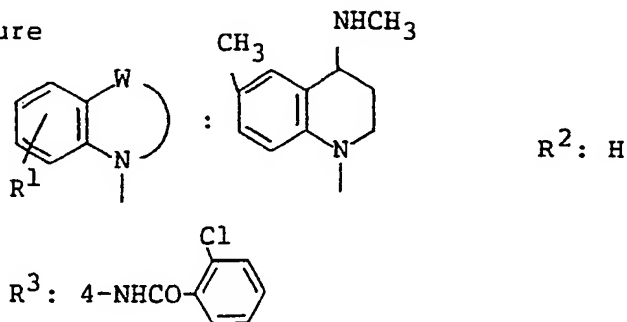
Crystalline form: Colorless amorphous

NMR analysis: 272)

Form: Free

Example 1128

Structure



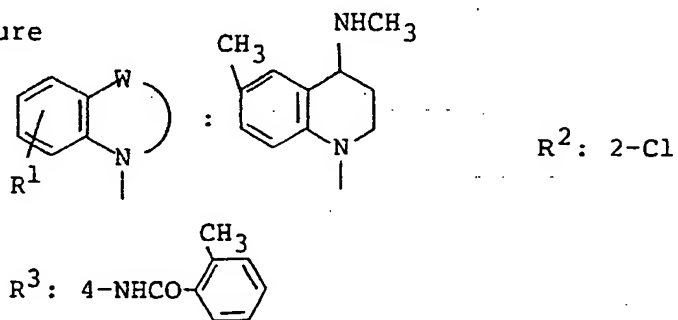
Crystalline form: Colorless amorphous

NMR analysis: 273)

Form: Free

Example 1129

Structure



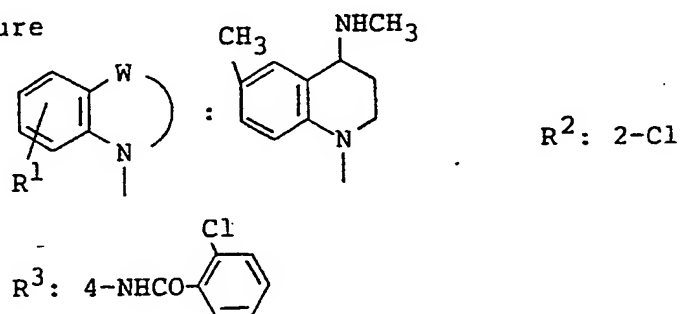
Crystalline form: Colorless amorphous

NMR analysis: 274)

Form: Free

Example 1130

Structure



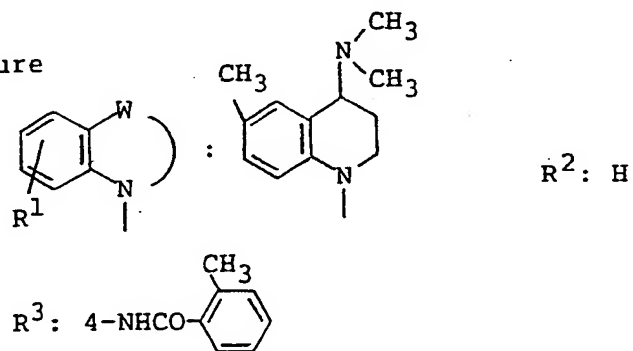
Crystalline form: Colorless amorphous

NMR analysis: 275)

Form: Free

Example 1131

Structure



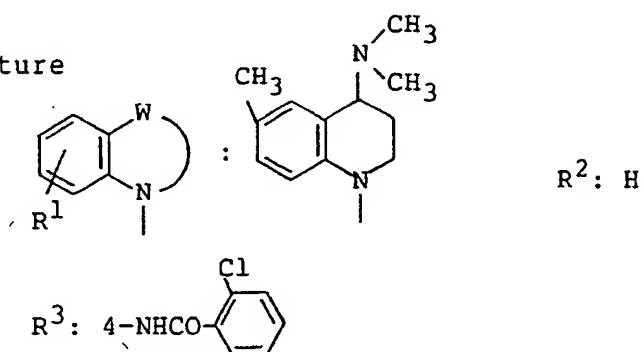
Crystalline form: Colorless amorphous

NMR analysis: 276)

Form: Free

Example 1132

Structure



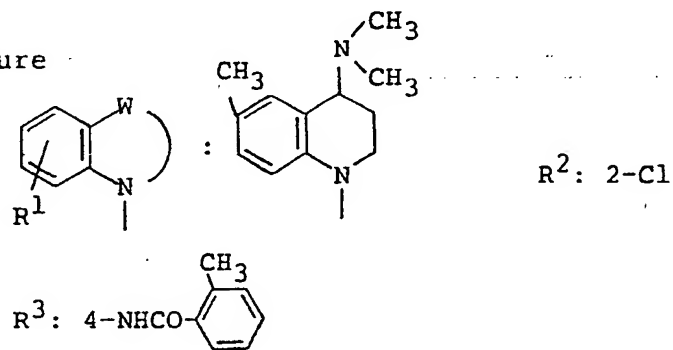
Crystalline form: Colorless amorphous

NMR analysis: 277)

Form: Free

Example 1133

Structure



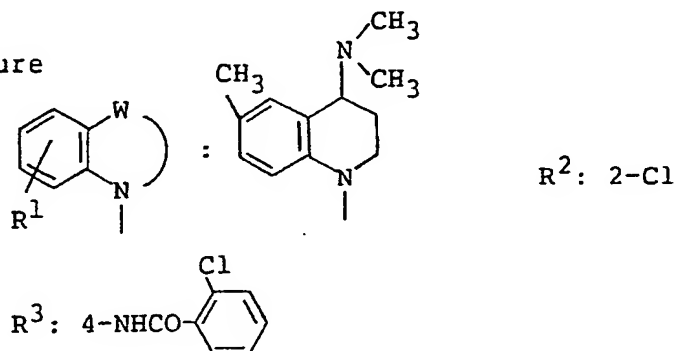
Crystalline form: Colorless amorphous

NMR analysis: 278)

Form: Free

Example 1134

Structure



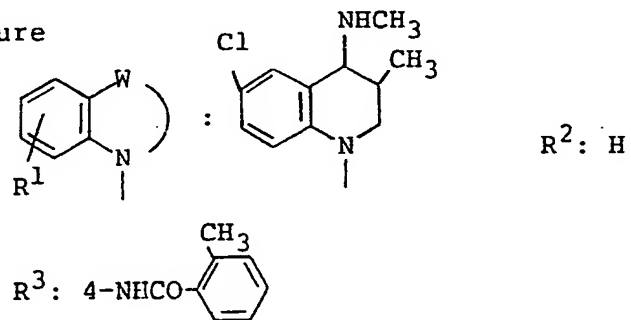
Crystalline form: Colorless amorphous

NMR analysis: 279)

Form: Free

Example 1135

Structure

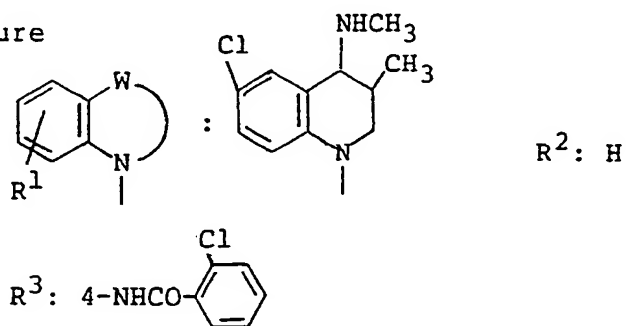


NMR analysis: 280)

Form: Free

Example 1136

Structure

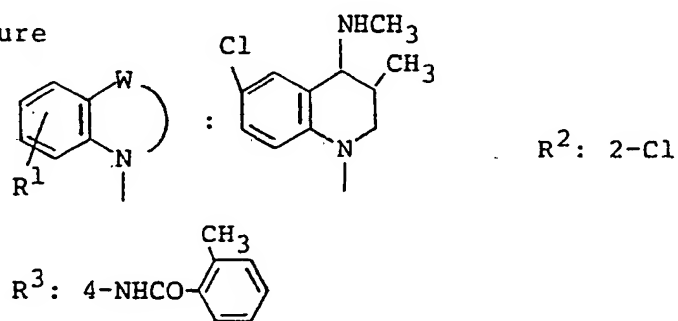


NMR analysis: 281)

Form: Free

Example 1137

Structure

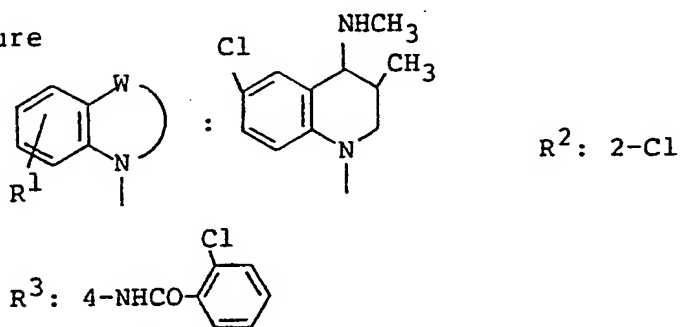


NMR analysis: 282)

Form: Free

Example 1138

Structure

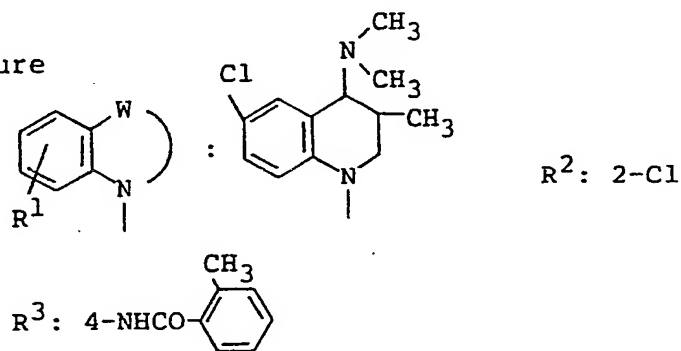


NMR analysis: 283)

Form: Free

Example 1139

Structure

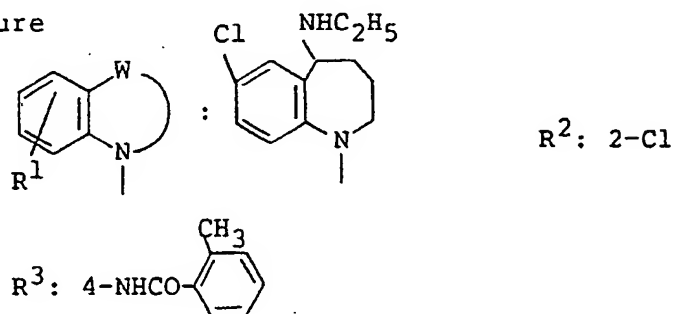


NMR analysis: 306)

Form: Free

Example 1140

Structure



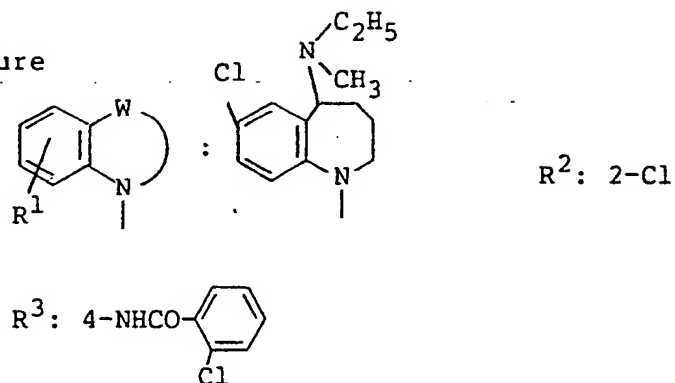
Crystalline form: Colorless amorphous

NMR analysis: 284)

Form: Free

Example 1141

Structure



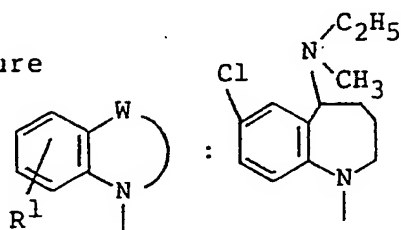
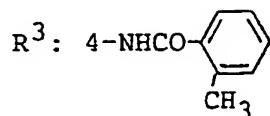
Crystalline form: Colorless amorphous

NMR analysis: 285)

Form: Free

Example 1142

Structure

 R^2 : 2-Cl

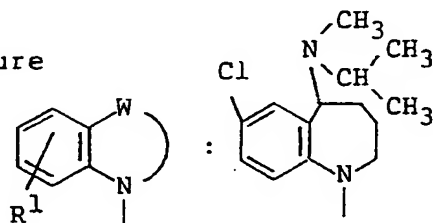
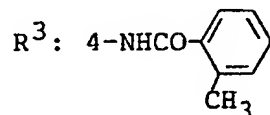
Crystalline form: Colorless amorphous

NMR analysis: 286)

Form: Free

Example 1143

Structure

 R^2 : 2-Cl

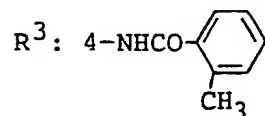
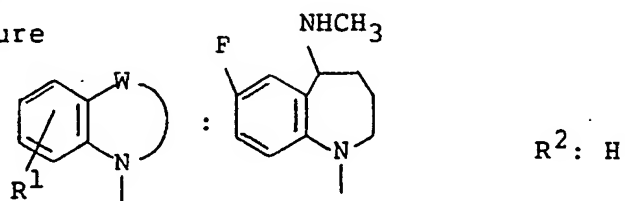
Crystalline form: Colorless amorphous

NMR analysis: 287)

Form: Free

Example 1144

Structure



Crystalline form: White powder

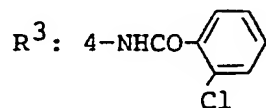
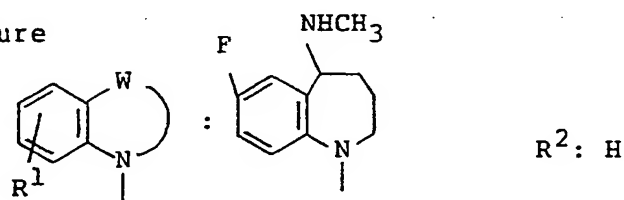
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 203 - 207°C

Form: Free

Example 1145

Structure



Crystalline form: White powder

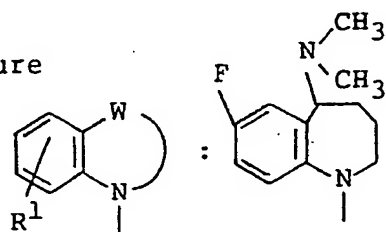
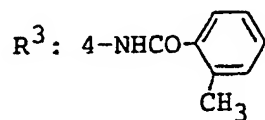
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 199 - 203°C

Form: Free

Example 1146

Structure

R²: H

Crystalline form: White powder

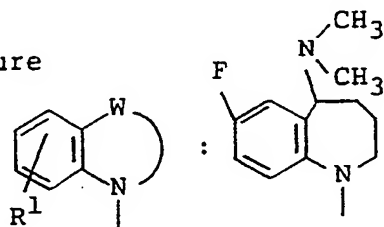
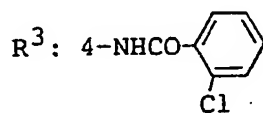
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 210 - 212°C

Form: Free

Example 1147

Structure

R²: H

Crystalline form: White powder

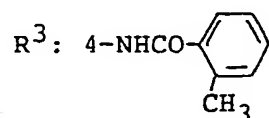
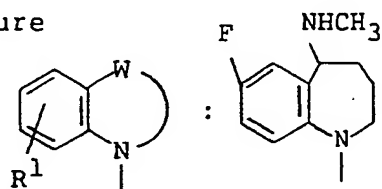
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 211 - 214°C

Form: Free

Example 1148

Structure



Crystalline form: White powder

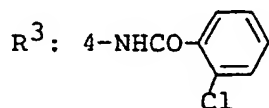
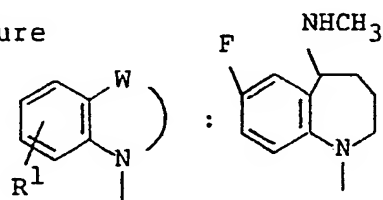
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 186 - 189°C

Form: Free

Example 1149

Structure



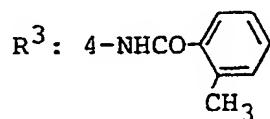
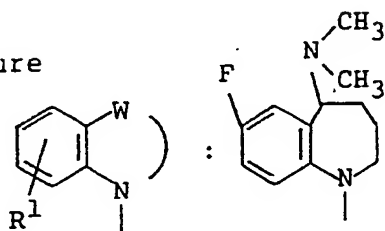
Crystalline form: Colorless amorphous

NMR analysis: 288)

Form: Free

Example 1150

Structure



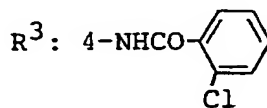
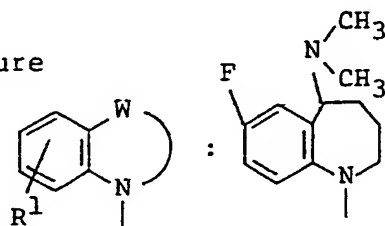
Crystalline form: Colorless amorphous

NMR analysis: 292)

Form: Free

Example 1151

Structure



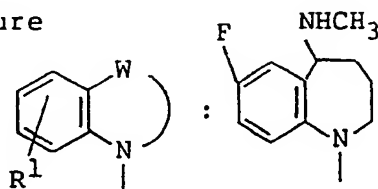
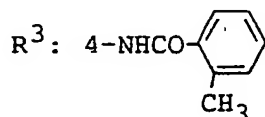
Crystalline form: Colorless amorphous

NMR analysis: 293)

Form: Free

Example 1152

Structure

 $R^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

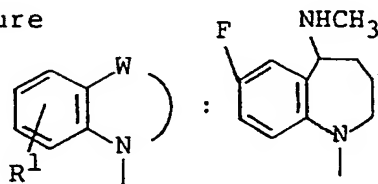
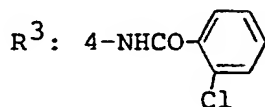
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 144 - 145°C

Form: Free

Example 1153

Structure

 $R^2: 3\text{-OCH}_3$ 

Crystalline form: White powder

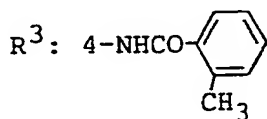
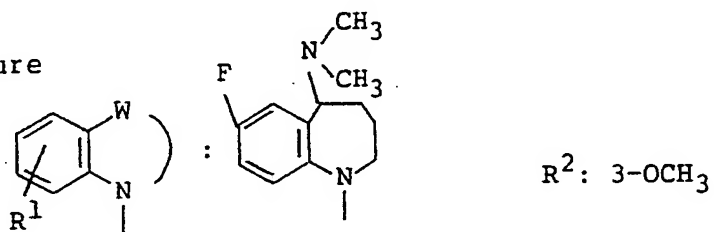
Recrystallization solvent: Dichloromethane/diethyl ether

Melting Point: 149 - 150°C

Form: Free

Example 1154

Structure



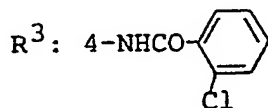
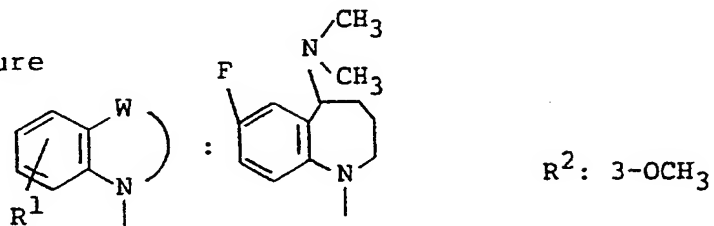
Crystalline form: Colorless amorphous

NMR analysis: 294)

Form: Free

Example 1155

Structure



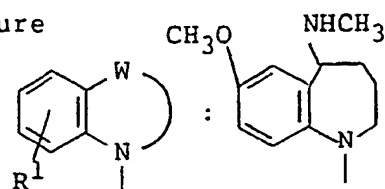
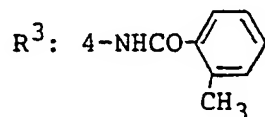
Crystalline form: Colorless amorphous

NMR analysis: 295)

Form: Free

Example 1156

Structure

 $R^2: 2-CH_3$ 

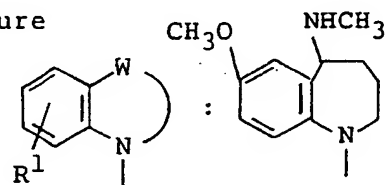
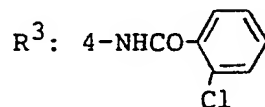
Crystalline form: Colorless amorphous

NMR analysis: 301)

Form: Free

Example 1157

Structure

 $R^2: 2-CH_3$ 

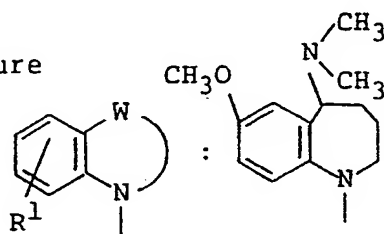
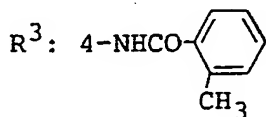
Crystalline form: Colorless amorphous

NMR analysis: 302)

Form: Free

Example 1158

Structure

R²: 2-CH₃

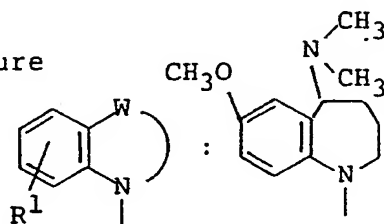
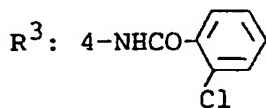
Crystalline form: Colorless amorphous

NMR analysis: 303)

Form: Free

Example 1159

Structure

R²: 2-CH₃

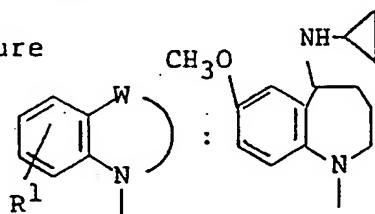
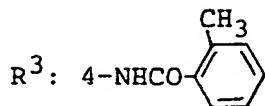
Crystalline form: Colorless amorphous

NMR analysis: 304)

Form: Free

Example 1160

Structure

 $R^2: H$ 

Crystalline form: White powder

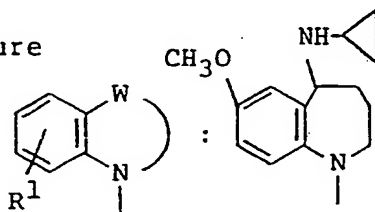
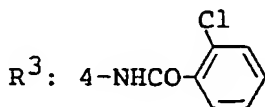
Recrystallization solvent: Ethyl acetate/diisopropyl ether

Melting Point: 191 - 193°C

Form: Free

Example 1161

Structure

 $R^2: H$ 

Crystalline form: White powder

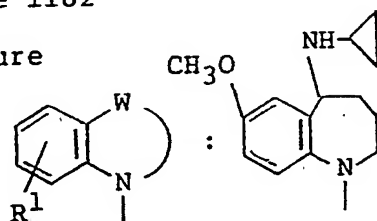
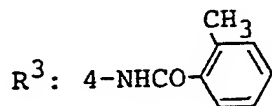
Recrystallization solvent: Ethyl acetate/diisopropyl ether

Melting Point: 221 - 223°C

Form: Free

Example 1162

Structure

R²: 3-OCH₃

Crystalline form: White powder

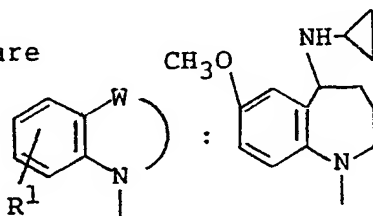
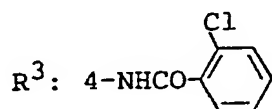
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 159 - 161°C

Form: Free

Example 1163

Structure

R²: 3-OCH₃

Crystalline form: White powder

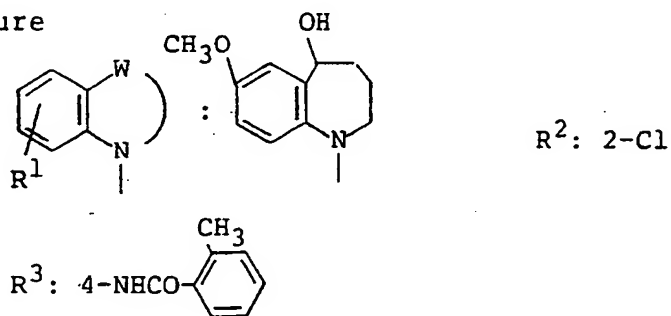
Recrystallization solvent: Ethyl acetate/n-hexane

Melting Point: 174 - 175°C

Form: Free

Example 1164

Structure



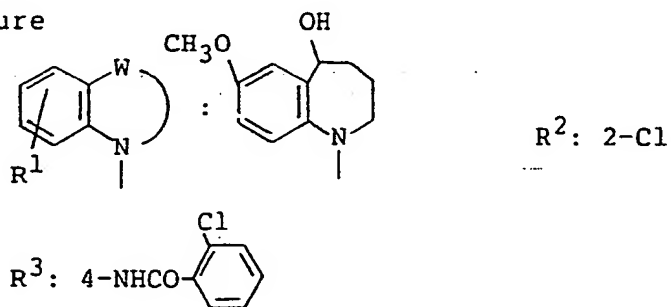
Crystalline form: Colorless amorphous

NMR analysis: 256)

Form: Free

Example 1165

Structure



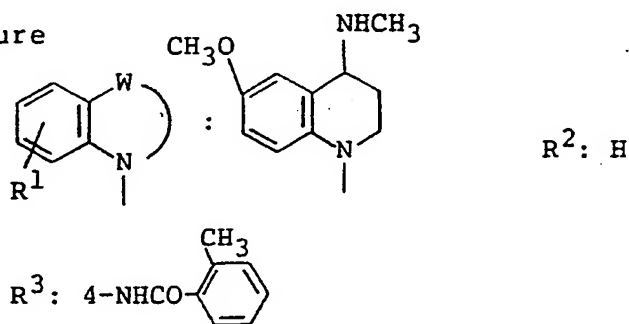
Crystalline form: Colorless amorphous

NMR analysis: 257)

Form: Free

Example 1166

Structure



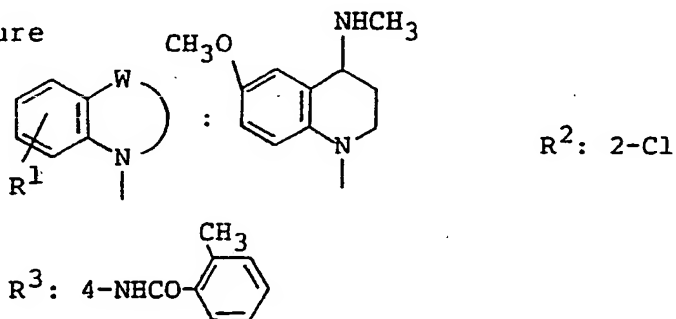
Crystalline form: Colorless amorphous

NMR analysis: 258)

Form: Free

Example 1167

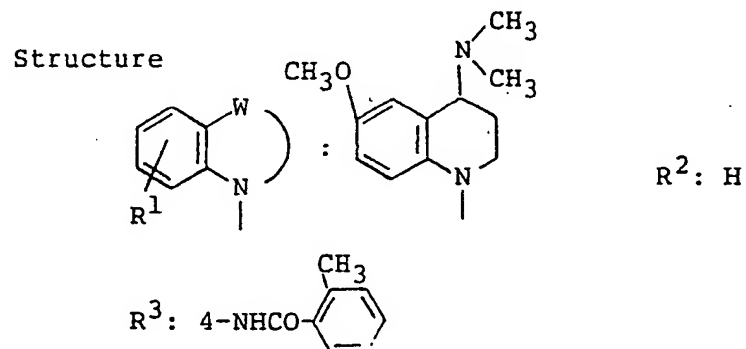
Structure



Crystalline form: Colorless amorphous

NMR analysis: 259)

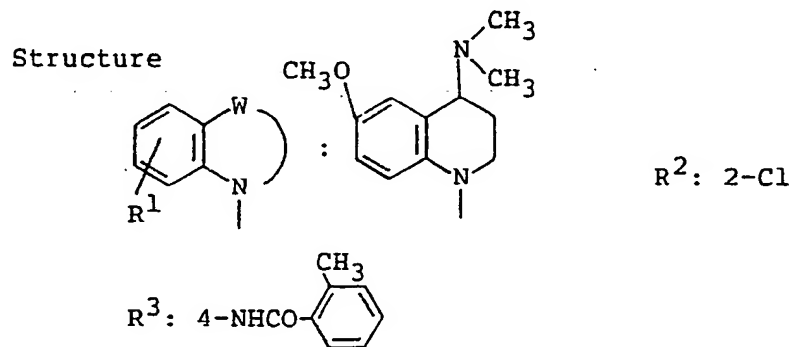
Form: Free

Example 1168

Crystalline form: Colorless amorphous

NMR analysis: 260)

Form: Free

Example 1169

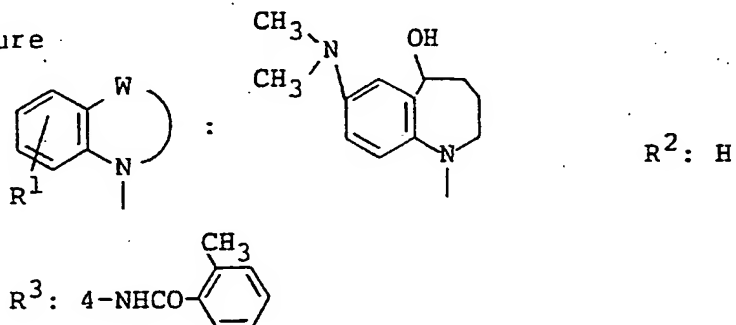
Crystalline form: Colorless amorphous

NMR analysis: 261)

Form: Free

Example 1170

Structure



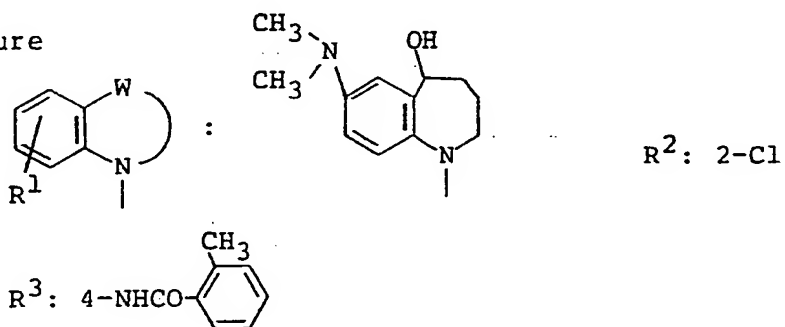
Crystalline form: Colorless amorphous

NMR analysis: 296)

Form: Free

Example 1171

Structure



Crystalline form: White powder

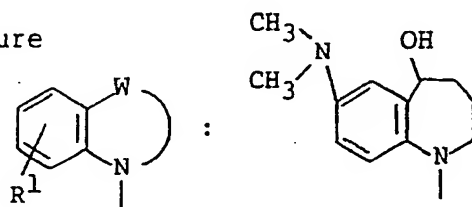
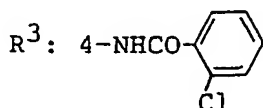
Recrystallization solvent: Ethanol/diethyl ether/n-hexane

Melting Point: 159 - 162°C

Form: Free

Example 1172

Structure

 R^2 : 2-Cl

Crystalline form: Colorless needles

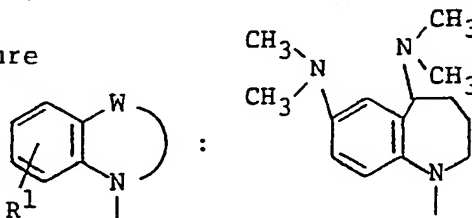
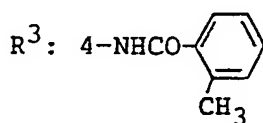
Recrystallization solvent: Ethanol/diethyl ether/n-hexane

Melting Point: 221 - 224°C

Form: Free

Example 1173

Structure

 R^2 : 2-Cl

Crystalline form: Colorless prisms

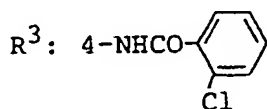
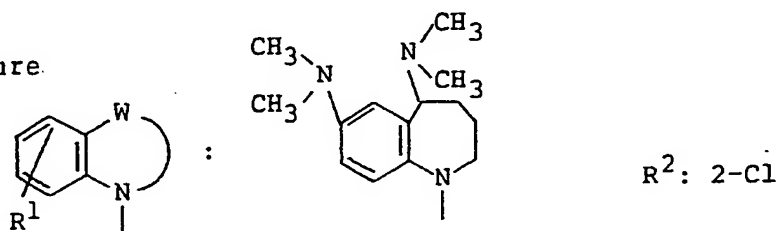
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 199 - 202°C

Form: Free

Example 1174

Structure



Crystalline form: Colorless prisms

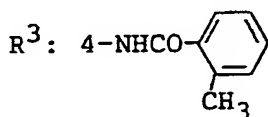
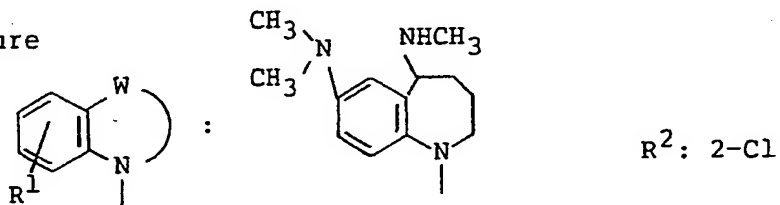
Recrystallization solvent: Ethanol/diethyl ether

Melting Point: 215 - 218°C

Form: Free

Example 1175

Structure



Crystalline form: Colorless needles

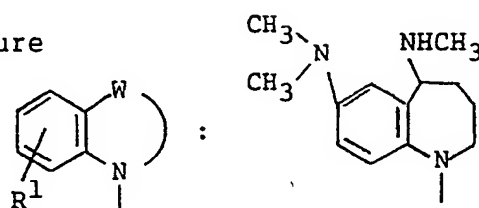
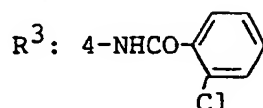
Recrystallization solvent: Ethanol/diethyl ether/n-hexane

Melting Point: 167 - 170°C

Form: Free

Example 1176

Structure

 R^2 : 2-Cl

Crystalline form: White powder

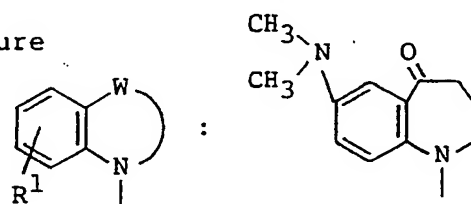
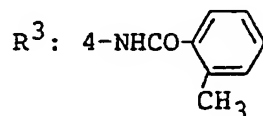
Recrystallization solvent: Ethanol/diethyl ether/n-hexane

Melting Point: 191 - 193°C

Form: Free

Example 1177

Structure

 R^2 : 2-Cl

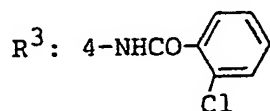
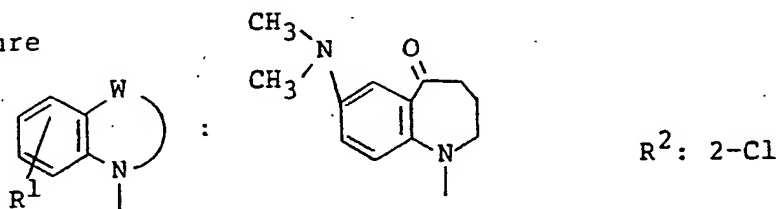
Crystalline form: Light yellow amorphous

NMR analysis: 262)

Form: Free

Example 1178

Structure



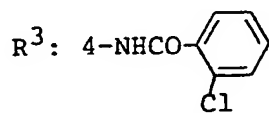
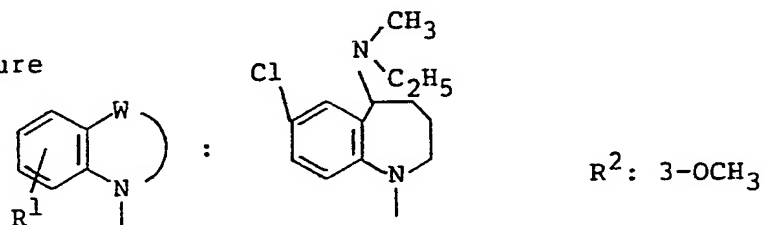
Crystalline form: Light yellow amorphous

NMR analysis: 263)

Form: Free

Example 1179

Structure



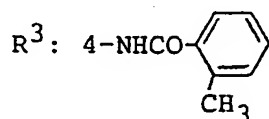
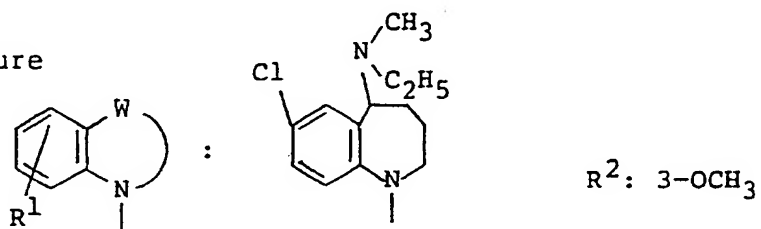
Crystalline form: Colorless amorphous

NMR analysis: 297)

Form: Free

Example 1180

Structure



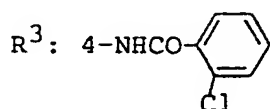
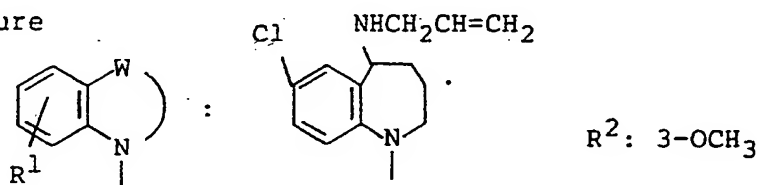
Crystalline form: Colorless amorphous

NMR analysis: 298)

Form: Free

Example 1181

Structure



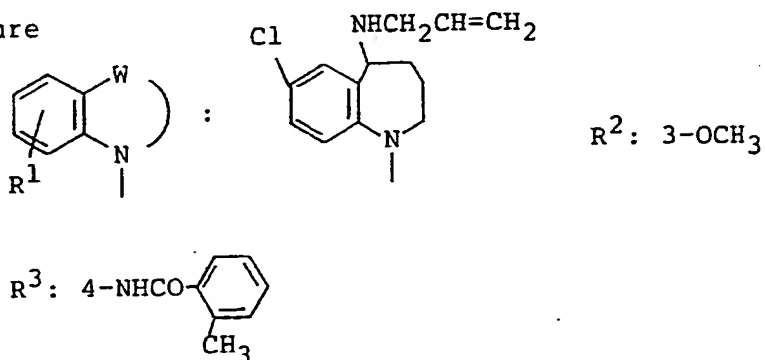
Crystalline form: Colorless amorphous

NMR analysis: 299)

Form: Free

Example 1182

Structure



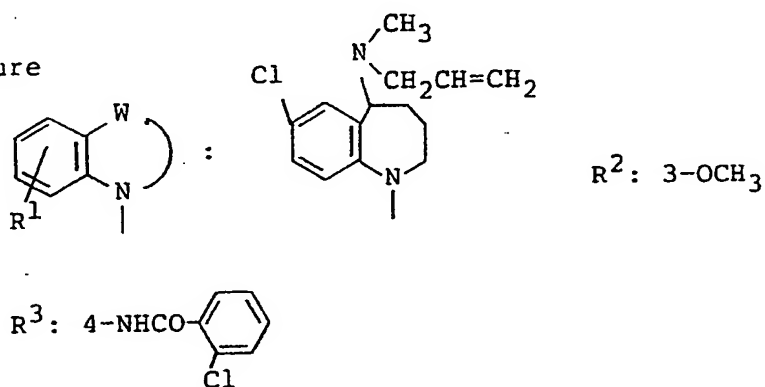
Crystalline form: Colorless amorphous

NMR analysis: 300)

Form: Free

Example 1183

Structure



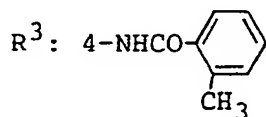
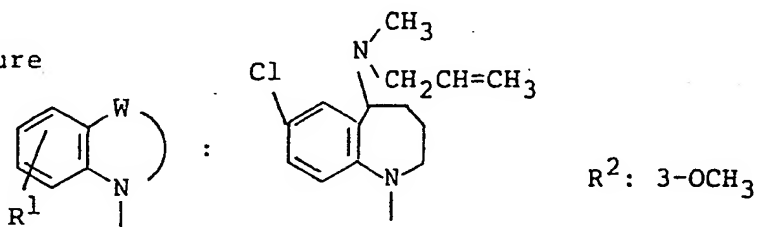
Crystalline form: Colorless amorphous

NMR analysis: 307)

Form: Free

Example 1184

Structure



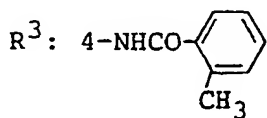
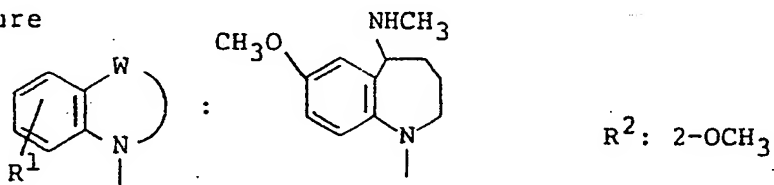
Crystalline form: Colorless amorphous

NMR analysis: 308)

Form: Free

Example 1185

Structure



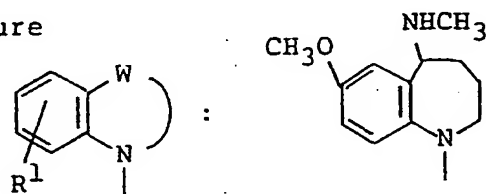
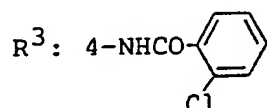
Crystalline form: Colorless amorphous

NMR analysis: 309)

Form: Free

Example 1186

Structure

 $R^2: 2-OCH_3$ 

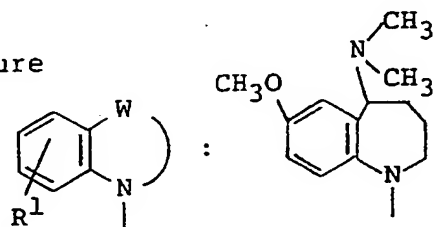
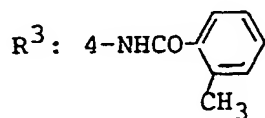
Crystalline form: Colorless amorphous

NMR analysis: 310)

Form: Free

Example 1187

Structure

 $R^2: 2-OCH_3$ 

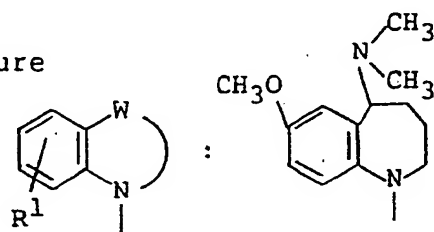
Crystalline form: Colorless amorphous


NMR analysis: 311)

Form: Free

Example 1188

Structure


$$R^2: 2-OCH_3$$

R^3 :  4-NHCO-C₆H₄-Cl

Crystalline form: Colorless amorphous

NMR analysis: 312)

Form: Free

- 238) ^1H -NMR (DMSO- d_6) δ ; 1.4-2.1 (4H, m), 2.34 (3H, s),
2.8-5.4 (4H, m), 7.09 (1H, d, $J=8.4$ Hz), 7.15-7.7
(9H, m), 7.76 (1H, d, $J=2.6$ Hz), 10.41 (1H, s)
- 239) ^1H -NMR (DMSO- d_6) δ ; 1.5-2.2 (4H, m), 2.8-5.2 (4H,
m), 7.09 (1H, d, $J=8.4$ Hz), 7.2-7.7 (9H, m), 7.76
(1H, d, $J=2.6$ Hz), 10.63 (1H, s)
- 240) ^1H -NMR (CDCl_3) δ ; 1.65-2.2 (4H, m), 2.25-2.65 (6H,
m), 2.75-4.6 (4H, m), 6.8-8.15 (11H, m)
- 241) ^1H -NMR (CDCl_3) δ ; 1.4-2.25 (4H, m), 2.25-2.55 (3H,
m), 2.7-4.8 (4H, m), 6.8-8.3 (11H, m)
- 242) ^1H -NMR (CDCl_3) δ ; 1.4-2.1 (4H, m), 2.35-2.6 (3H,
m), 2.8-5.2 (7H, m), 6.8-8.05 (11H, m)
- 243) ^1H -NMR (CDCl_3) δ ; 1.4-2.15 (4H, m), 2.4-5.2 (7H,
m), 6.8-7.85 (10H, m), 7.9-8.3 (1H, m)
- 244) ^1H -NMR (CDCl_3) δ ; 1.20-2.38 (11H, m), 2.98-5.10
(3H, m), 6.45-7.04 (2H, m), 7.05-7.86 (8H, m),
8.00-8.50 (1H, m)
- 245) ^1H -NMR (CDCl_3) δ ; 1.05-2.78 (14H, m), 2.78-5.18
(2H, m), 6.36-7.03 (2H, m), 7.06-7.90 (8H, m),
7.98-8.39 (1H, m)
- 246) ^1H -NMR (CDCl_3) δ ; 1.75-2.54 (2H, m), 2.60-4.03
(4H, m), 3.37 (3H, brs), 5.17 (2H, s), 6.60-6.83
(3H, m), 6.90-7.07 (1H, m), 7.07-7.20 (1H, m),
7.22-7.50 (6H, m), 7.73-7.84 (1H, m)
- 247) ^1H -NMR (CDCl_3) δ ; 1.60-2.40 (2H, m), 2.45 (3H, s),
2.65-3.06 (2H, m), 3.06-5.28 (2H, m), 3.35 (3H,

- brs), 6.59-7.60 (9H, m), 7.67-7.88 (1H, m), 8.12 (1H, brs)
- 248) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.60-2.52 (2H, m), 2.64-5.32 (4H, m), 3.37 (3H, brs), 6.60-7.98 (10H, m), 8.50 (1H, brs)
- 249) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.18-3.15 (12H, m), 3.40-4.38 (5H, m), 6.58-7.75 (10H, m), 8.30-8.71 (1H, m)
- 250) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.26-0.71 (4H, m), 1.15-3.29 (10H, m), 3.40-4.95 (5H, m), 6.60-7.85 (10H, m), 8.18-8.68 (1H, m)
- 251) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.25-0.72 (4H, m), 1.16-2.35 (6H, m), 2.35-3.30 (4H, m), 3.43-4.98 (2H, m), 6.57-7.94 (10H, m), 8.22-8.89 (1H, m)
- 252) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.69-2.90 (9H, m), 2.90-5.10 (5H, m), 6.40-7.85 (10H, m), 8.25-8.54 (1H, m)
- 253) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.17 (2H, brs), 2.34 (3H, s), 2.49 (3H, s), 2.87 (2H, t, $J=6.0$ Hz), 3.10-5.00 (2H, m), 3.70 (3H, s), 6.67 (1H, d, $J=8.0$ Hz), 6.85-6.88 (2H, m), 7.09 (1H, dd, $J=1.5, 8.0$ Hz), 7.21-7.50 (4H, m), 7.64 (1H, d, $J=1.9$ Hz), 8.11 (1H, m), 8.33 (1H, d, $J=8.8$ Hz)
- 254) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.42-5.06 (13H, m), 6.51 (1H, d, $J=7.8$ Hz), 6.76 (1H, m), 7.01-7.63 (10H, m), 8.53 (1H, m)
- 255) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.26-4.93 (16H, m), 6.69-7.73 (10H, m), 8.62-8.84 (1H, m)

- 256) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.45-1.90 (2H, m), 1.90-2.33 (2H, m), 2.33-3.25 (4H, m), 3.60-3.93 (3H, m), 4.45-5.15 (2H, m), 6.40-8.25 (11H, m)
- 257) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.49-1.97 (2H, m), 1.97-3.10 (3H, m), 3.58-3.98 (3H, m), 4.60-5.26 (2H, m), 6.44-8.36 (11H, m)
- 258) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.82-2.13 (1H, m), 2.13-2.43 (1H, m), 2.50 (3H, s), 2.57 (3H, s), 3.69-4.06 (3H, m), 3.78 (3H, s), 6.45-6.80 (2H, m), 6.85-7.00 (1H, m), 7.18-7.80 (9H, m)
- 259) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.72-2.05 (1H, m), 2.11-2.40 (1H, m), 2.51 (3H, s), 2.57 (3H, s), 3.40-4.20 (3H, m), 3.77 (3H, s), 6.35-6.64 (1H, m), 6.79-6.96 (1H, m), 7.15-8.13 (9H, m)
- 260) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.71-2.05 (1H, m), 2.07-2.32 (1H, m), 2.33 (6H, s), 2.47 (3H, s), 3.50-3.80 (2H, m), 3.76 (3H, s), 3.95-4.17 (1H, m), 6.40-6.70 (2H, m), 6.90-7.03 (1H, m), 7.14-7.77 (8H, m), 7.90-8.14 (1H, m)
- 261) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.76-2.70 (2H, m), 2.30 (6H, s), 2.47 (3H, s), 3.23-4.40 (3H, m), 3.73 (3H, s), 6.30-6.65 (2H, m), 6.65-8.76 (9H, m)
- 262) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.68-2.35 (2H, m), 2.36-5.11 [13H, m, 2.45 (3H, s), 2.92 (6H, s)], 6.56 (1H, dd, $J=3.1, 8.7$ Hz), 6.78-7.06 (2H, m), 6.82 (1H, d, $J=8.7$ Hz), 7.11-7.68 (6H, m), 7.97 (1H, brs)

- 263) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.69-2.30 (2H, m), 2.59-5.10 [10H, m, 2.92 (6H, s)], 6.56 (1H, dd, $J=3.1$, 8.8 Hz), 6.72-7.90 (9H, m), 8.42 (1H, brs)
- 264) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.49 (1H, brs), 1.82-2.01 (1H, m), 2.03-2.26 (1H, m), 2.46 (3H, s), 2.54 (3H, s), 3.67-3.76 (1H, m), 3.86 (2H, t, $J=6.8$ Hz), 6.67 (1H, d, $J=8.6$ Hz), 6.93 (1H, dd, $J=8.6$, 2.5 Hz), 7.13-7.43 (9H, m), 8.15 (1H, brs)
- 265) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.58 (1H, brs), 1.86-2.03 (1H, m), 2.08-2.30 (1H, m), 2.56 (3H, s), 3.69-3.78 (1H, m), 3.91 (2H, t, $J=6.5$ Hz), 6.69 (1H, d, $J=8.7$ Hz), 6.94 (1H, dd, $J=8.6$, 2.5 Hz), 7.33-7.47 (6H, m), 7.54-7.63 (2H, m), 7.67-7.77 (1H, m), 8.16 (1H, brs)
- 266) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.50 (1H, brs), 1.76-2.23 (2H, m), 2.42 (3H, s), 2.47 (3H, s), 3.55-3.94 (3H, m), 6.28-7.78 (10H, m), 8.91 (1H, brs)
- 267) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.46 (1H, brs), 1.82-2.28 (2H, m), 2.50 (3H, s), 3.52-4.08 (3H, m), 6.34-7.75 (10H, m), 8.61 (1H, brs)
- 268) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.80-2.31 (2H, m), 2.32 (3H, s), 2.48 (3H, s), 3.51-3.82 (2H, m), 3.95-4.15 (1H, m), 6.59 (1H, d, $J=8.6$ Hz), 6.90 (1H, dd, $J=8.6$, 2.5 Hz), 7.16-7.61 (9H, m), 7.88 (1H, brs)
- 269) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.86-2.04 (1H, m), 2.13-2.31 (1H, m), 2.33 (3H, s), 3.53-3.62 (1H, m), 3.76 (1H,

- dt, $J=12.8, 6.4$ Hz), 6.60 (1H, d, $J=8.7$ Hz), 6.91 (1H, dd, $J=8.7, 2.5$ Hz), 7.33-7.52 (6H, m), 7.54-7.66 (2H, m), 7.73-7.82 (1H, m), 8.07 (1H, brs)
- 270) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.27 (2H, m), 2.28 (6H, s), 2.48 (3H, s), 3.37-4.07 (3H, m), 6.33-7.91 (10H, m), 8.20 (1H, brs)
- 271) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.71-2.26 (2H, m), 2.28 (6H, s), 3.36-4.10 (3H, m), 6.35-7.95 (10H, m), 8.59 (1H, brs)
- 272) $^1\text{H-NMR}$ (CDCl_3) δ ; 2.02-2.23 (2H, m), 2.28 (3H, s), 2.47 (3H, s), 2.56 (3H, s), 3.73-4.07 (3H, m), 4.68 (1H, brs), 6.61 (1H, d, $J=8.1$ Hz), 6.72-6.83 (1H, m), 7.17-7.63 (11H, m), 8.03 (1H, brs)
- 273) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.61 (1H, brs), 1.87-2.25 (2H, m), 2.29 (3H, s), 2.56 (3H, s), 3.67-3.78 (1H, m), 3.91 (2H, t, $J=6.9$ Hz), 6.52-6.79 (2H, m), 7.09-7.15 (1H, m), 7.30-7.90 (8H, m), 8.23 (1H, brs)
- 274) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.58 (1H, brs), 1.82-2.23 (2H, m), 2.27 (3H, s), 2.48 (3H, s), 2.50 (3H, s), 3.47-4.05 (3H, m), 6.23-6.83 (2H, m), 7.00-7.50 (7H, m), 7.53-7.74 (1H, m), 8.28 (1H, brs)
- 275) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.60 (1H, brs), 1.82-2.35 (5H, m), 2.49 (3H, s), 3.41-4.08 (3H, m), 6.30-6.80 (1H, m), 6.98-7.68 (8H, m), 7.31-7.82 (1H, m), 8.77 (1H, brs)
- 276) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.76-2.03 (2H, m), 2.27 (3H, s),

- 2.32 (6H, s), 2.47 (3H, s), 3.48-3.58 (1H, m), 3.66 (1H, dt, J=12.7, 6.1 Hz), 3.97-4.14 (1H, m), 6.48 (1H, d, J=8.2 Hz), 6.65-6.77 (1H, m), 7.14-7.59 (9H, m), 7.96 (1H, brs)
- 277) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.75-2.04 (2H, m), 2.27 (3H, s), 2.33 (6H, s), 3.48-3.58 (1H, m), 3.67 (1H, dt, J=12.7, 6.1 Hz), 3.98-4.16 (1H, m), 6.48 (1H, d, J=8.2 Hz), 6.72 (1H, dd, J=8.2, 1.9 Hz), 7.16 (1H, d, J=1.9 Hz), 7.27-7.91 (8H, m), 8.31 (1H, brs)
- 278) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.72-2.05 (2H, m), 2.28 (9H, s), 2.47 (3H, s), 3.16-4.34 (3H, m), 6.38-7.79 (10H, m), 8.37 (1H, brs)
- 279) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.65-2.07 (2H, m), 2.28 (9H, s), 3.26-4.38 (3H, m), 6.34-8.06 (10H, m), 8.53 (1H, brs)
- 280) Two stereoisomers: • Both colorless amorphous
- Isomer A:
- $[\alpha]_D^{22} = 0^\circ$ (chloroform, c=1.0)
- $^1\text{H-NMR}$ (CDCl_3) δ ; 1.04 (3H, d, J=6.9 Hz), 1.59 (1H, brs), 2.25-2.45 (1H, m), 2.49 (3H, s), 2.52 (3H, s), 3.53-3.69 (2H, m), 3.91 (1H, abq, J=7.2, 12.9 Hz), 6.60 (1H, d, J=8.6 Hz), 6.93 (1H, dd, J=8.6, 2.5 Hz), 7.18-7.60 (9H, m), 7.76 (1H, brs)
- Isomer B:
- $[\alpha]_D^{22} = 0^\circ$ (chloroform, c=1.0)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.06 (3H, d, $J=6.9$ Hz), 1.60 (1H, brs), 2.21-2.43 (1H, m), 2.47 (3H, s), 2.52 (3H, s), 3.51-3.66 (2H, m), 3.93 (1H, abq, $J=7.5$, 12.9 Hz), 6.60-6.68 (1H, m), 6.95 (1H, dt, $J=7.5$, 1.8 Hz), 7.03 (1H, dt, $J=7.4$, 1.4 Hz), 7.17-7.55 (8H, m), 7.81 (1H, brs)

281) Two stereoisomers: Both colorless amorphous

Isomer A:

$[\alpha]_D^{22} = 0^\circ$ (chloroform, $c=1.0$)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.04 (3H, d, $J=6.9$ Hz), 1.55 (1H, brs), 2.23-2.46 (1H, m), 2.53 (3H, s), 3.53-3.67 (2H, m), 3.91 (1H, abq, $J=7.1$, 12.9 Hz), 6.61 (1H, d, $J=8.6$ Hz), 6.93 (1H, dd, $J=8.6$, 2.5 Hz), 7.28-7.52 (6H, m), 7.54-7.65 (2H, m), 7.70-7.79 (1H, m), 8.16 (1H, brs)

Isomer B:

$[\alpha]_D^{22} = 0^\circ$ (chloroform, $c=1.0$)

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.06 (3H, d, $J=6.9$ Hz), 1.61 (1H, brs), 2.21-2.42 (1H, m), 2.51 (3H, s), 3.48-3.67 (2H, m), 3.90 (1H, abq, $J=7.4$, 12.9 Hz), 6.59-6.67 (1H, m), 6.94 (1H, dt, $J=7.5$, 1.9 Hz), 7.03 (1H, dt, $J=7.4$, 1.4 Hz), 7.23-7.75 (8H, m), 8.41 (1H, brs)

282) Two stereoisomers: Both colorless amorphous

Isomer A:

$$[\alpha]_D^{22} = 0^\circ \text{ (chloroform, } c=1.0)$$

$^1\text{H-NMR}$ (CDCl_3) δ ; 0.99 (3H, d, $J=6.5$ Hz), 1.37 (1H, brs), 2.16-2.40 (1H, m), 2.46 (3H, s), 2.48 (3H, s), 3.38-3.96 (3H, m), 6.30-7.28 (10H, m), 8.26 (1H, brs)

Isomer B:

$$[\alpha]_D^{22} = 0^\circ \text{ (chloroform, } c=1.0)$$

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.03 (3H, d, $J=6.7$ Hz), 1.44 (1H, brs), 2.17-2.40 (1H, m), 2.45 (3H, s), 2.47 (3H, s), 3.40-3.98 (3H, m), 6.47-7.73 (10H, m), 8.23 (1H, brs)

283) Two stereoisomers: Both colorless amorphous

Isomer A:

$$[\alpha]_D^{22} = 0^\circ \text{ (chloroform, } c=1.0)$$

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.00 (3H, d, $J=6.6$ Hz), 1.40 (1H, brs), 2.18-2.42 (1H, m), 2.47 (3H, s), 3.36-4.02 (3H, m), 6.32-7.78 (10H, m), 8.55 (1H, brs)

Isomer B:

$$[\alpha]_D^{22} = 0^\circ \text{ (chloroform, } c=1.0)$$

$^1\text{H-NMR}$ (CDCl_3) δ ; 1.03 (3H, d, $J=6.5$ Hz), 1.39 (1H, brs), 2.14-2.39 (1H, m), 2.45 (3H, s), 3.34-3.98 (3H, m), 6.53-7.98 (10H, m), 8.78 (1H, brs)

284) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.05-1.25 (3H, m), 1.25-2.80 (10H, m), 3.00-5.10 (3H, m), 6.75-8.40 (11H, m)

- 285) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.00-2.80 (12H, m), 3.00-5.10 (3H, m), 6.70-7.80 (10H, m), 8.30-8.80 (1H, m)
- 286) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.95-2.80 (15H, m), 2.80-5.15 (3H, m), 6.70-7.05 (2H, m), 7.10-7.80 (10H, m), 7.95-8.45 (1H, m)
- 287) $^1\text{H-NMR}$ (CDCl_3) δ ; 0.80-2.60 (16H, m), 2.60-5.05 (4H, m), 6.70-7.70 (10H, m), 7.85-8.40 (1H, m)
- 288) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.30-2.60 (8H, m), 2.60-5.10 (3H, m), 6.60-7.95 (10H, m), 8.25-8.70 (1H, m)
- 289) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.27-4.91 (19H, m), 6.68-7.73 (10H, m), 8.40-8.71 (1H, m)
- 290) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.81-2.54 (6H, m), 2.15 (3H, s), 2.41 (3H, s), 2.46 (3H, s), 3.61-3.71 (3H, m), 6.91-7.43 (10H, m), 8.60 (1H, s)
- 291) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.86-2.50 (3H, m), 2.28 (9H, s), 2.49 (3H, s), 6.60-7.47 (10H, m), 7.75 (1H, m)
- 292) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.15-2.55 (13H, m), 2.55-5.10 (3H, m), 6.60-8.40 (11H, m)
- 293) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.15-2.45 (10H, m), 2.55-5.10 (3H, m), 6.60-7.80 (10H, m), 8.30-8.70 (1H, m)
- 294) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.60 (4H, m), 2.41 (6H, s), 2.49 (3H, s), 3.76 (3H, s), 2.60-5.20 (3H, m), 6.50-6.80 (3H, m), 6.90-7.60 (6H, m), 8.13 (1H, s), 8.30 (1H, d, $J=8.5$ Hz)
- 295) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.15-2.50 (4H, m), 2.41 (6H, s), 2.60-5.20 (3H, m), 3.77 (3H, s), 6.50-7.50 (8H, m),

- 7.65-7.80 (1H, m), 8.31 (1H, d, J=8.4 Hz), 8.61 (1H, s)
- 296) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.55-3.13 (12H, m), 2.44 (3H, s), 4.60-5.14 (2H, m), 6.28 (1H, dd, J=2.5, 8.5 Hz), 6.48 (1H, d, J=8.5 Hz), 6.99 (1H, d, J=2.5 Hz), 7.07-7.58 (8H, m), 7.80 (1H, brs)
- 297) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.01-2.88, 3.22-4.41, 4.90-5.28 [total 18H, 1.17 (3H, t, J=7.2 Hz), 2.40 (3H, s), 3.77 (3H, s)], 6.55 (1H, d, J=8.1 Hz), 6.60-7.98 (8H, m), 8.23-8.75 (2H, m)
- 298) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.00-3.04, 3.24-4.45, 4.91-5.27 [total 21H, m, 1.17 (3H, t, J=7.0 Hz), 2.39 (3H, s), 2.50 (3H, s), 3.75 (3H, s)], 8.56 (1H, d, J=8.3 Hz), 6.69 (1H, d, J=8.3 Hz), 6.82-7.75 (7H, m), 8.05-8.49 (2H, m)
- 299) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.21-4.62, 4.90-5.43 (total 15H, m), 5.70-6.11 (1H, m), 6.35-7.90 (9H, m), 8.07-8.92 (2H, m)
- 300) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-4.68, 5.01-5.3 [total 18H, m, 2.50 (3H, s)], 5.72-6.14 (1H, m), 6.49-7.69 (9H, m), 8.01-8.58 (2H, m)
- 301) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-2.80 (14H, m), 3.00-5.10 (6H, m), 6.40-8.00 (11H, m)
- 302) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.30-2.90 (11H, m), 3.00-5.10 (6H, m), 6.40-7.80 (10H, m), 8.00-8.35 (1H, m)
- 303) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.80 (16H, m), 2.85-5.15

- (6H, m), 6.40-7.80 (11H, m)
- 304) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.10-2.80 (13H, m), 2.90-5.10 (6H, m), 6.40-7.85 (10H, m), 7.90-8.20 (1H, m)
- 305) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.27-5.28 (19H, m), 3.75 (3H, s), 6.51 (1H, d, $J=7.9$ Hz), 6.69-6.81 (2H, m), 7.05-7.49 (6H, m), 8.14 (1H, m), 8.27 (1H, d, $J=8.4$ Hz)
- 306) Two stereoisomers: Both colorless amorphous
- Isomer A:
- $[\alpha]_D^{22} = 0^\circ$ (chloroform, $c=1.0$)
- $^1\text{H-NMR}$ (CDCl_3) δ ; 0.78-1.02 (3H, m), 2.23-2.52 (1H, m), 2.39 (6H, s), 2.48 (3H, s), 3.17-4.30 (3H, m), 6.85-7.84 (10H, m), 8.17 (1H, brs)
- Isomer B:
- $[\alpha]_D^{22} = 0^\circ$ (chloroform, $c=1.0$)
- $^1\text{H-NMR}$ (CDCl_3) δ ; 0.73-1.00 (3H, m), 2.17-2.52 (1H, m), 2.39 (6H, s), 2.49 (3H, s), 3.15-4.33 (3H, m), 6.36-7.55 (8H, m), 7.58-7.83 (2H, m), 8.19 (1H, brs)
- 307) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.25-4.44, 4.98-5.41 [total 17H, m, 2.40 (3H, s), 3.76 (3H, s)], 5.72-6.13 (1H, m), 6.56 (1H, d, $J=8.4$ Hz), 6.69 (1H, d, $J=7.9$ Hz), 6.77-7.93 (7H, m), 8.32 (1H, d, $J=8.3$ Hz), 8.49-8.95 (1H, m)
- 308) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.23-5.42 (20H, m), 5.78-6.09

(1H, m), 6.56 (1H, d, J=8.3 Hz), 6.61-7.82 (8H, m),
8.14 (1H, s), 8.30 (1H, d, J=8 Hz)

309) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.70 (11H, m), 2.80-4.90

(9H, m), 6.40-7.70 (10H, m), 8.30-8.70 (1H, m)

310) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.80 (8H, m), 2.85-5.05

(9H, m), 6.40-7.80 (10H, m), 8.10-8.50 (1H, m)

311) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.75 (13H, m), 2.80-5.10

(9H, m), 6.40-8.00 (11H, m)

312) $^1\text{H-NMR}$ (CDCl_3) δ ; 1.20-2.80 (10H, m), 2.90-5.10

(9H, m), 6.40-7.80 (10H, m), 8.00-8.40 (1H, m)

Example 1189

By using di-p-toluoyl-L-tartaric acid monohydrate or di-p-toluoyl-D-tartaric acid monohydrate, the compound obtained in above Example 408 is optically resolved to give the following compounds.

(+)-5-Dimethylamino-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride
White amorphous

$[\alpha]_{\text{D}}^{25} = +234^\circ$ (methanol, c=0.2)

Purity; more than 99 % ee, determined by HPLC using an optical active column

HPLC conditions;

Mobile phase; n-hexane : ethanol : diethylamine

= 950 : 50 : 1

Flow rate; 1.0 ml/min.

Column; CHIRALCEL OD, 25 cm x 0.46 cm

(manufactured by Daicel Chemical Ind. Ltd.)

Concentration of sample; 0.1 % in methanol

Retention time; 34 minutes

$^1\text{H-NMR}$ (DMSO-d_6) δ ; 0.85-1.20, 1.56-4.06, 4.94-5.21 (total 13H, m), 2.36 (3H, s), 6.79 (1H, d, $J=7.6$ Hz), 7.12-7.60 (8H, m), 7.62 (2H, d, $J=8.4$ Hz), 8.00 (1H, d, $J=7.6$ Hz), 10.43 (1H, s), 11.80 (1H, brs)

(-)-5-Dimethylamino-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride
White amorphous

$[\alpha]_{\text{D}}^{25} = -23.1^\circ$ (methanol, $c=0.2$)

Purity; more than 99 % ee, determined by HPLC using an optical active column, and the conditions are the same as above except that the retention time is 40 minutes.

$^1\text{H-NMR}$ (DMSO-d_6) δ ; 0.83-1.19, 1.55-4.06, 4.94-5.20 (total 13H, m), 2.36 (3H, s), 6.80 (1H, d, $J=7.8$ Hz), 7.12-7.60 (8H, m), 7.63 (2H, d, $J=8.5$ Hz), 8.00 (1H, d, $J=7.8$ Hz), 10.44 (1H, s), 11.74 (1H, brs)

Pharmacological TestExperiment 1 : V₁ receptor binding assay

Using rat liver plasma membrane preparations prepared according to Ichihara's method [cf: Akira Ichihara, J. Bio. Chem., 258, 9283 (1983)], the plasma membrane (50000dpm, 2×10^{-10} M) of [³H]-Arg-vasopressin and a test compound (60 µg, 10^{-8} - 10^{-4} M) are incubated at 37°C for 10 minutes in 100 mM Tris-HCl buffer (pH: 8.0, 250 µl) containing 5 mM MgCl₂, 1 mM EDTA and 0.1 % BSA. After incubation, the mixture is filtered three times using the glass filter (GF/F) so as to separate the membrane preparation combined with vasopressin and then washed with the buffer (5 ml). This glass filter is taken out and mixed with liquid scintillation cocktail. The amount of [³H]-vasopressin combined with the membrane is measured by liquid scintillation counter and the rate of the inhibitory effect of the test compound is estimated according to the following equation.

$$\text{Rate of the inhibitory effect (\%)} = 100 - \frac{C_1 - B_1}{C_0 - B_1} \times 100$$

C¹: The amount of [³H]-vasopressin combined with the membrane in the presence of the test compound (in prescribed amount).

C⁰: The amount of [³H]-vasopressin combined with the membrane in the absence of the test compound.

B¹: The amount of [³H]-vasopressin combined with the membrane in the presence of the excess amount of vasopressin (10^{-6} M).

The results are expressed as IC₅₀ values, which is the concentration of the test compound required to achieve the inhibitory effect in the rate of 50 %.

The results are shown in the following Table 5.

Test compound

1. 1-(4-Benzoylamino benzoyl)-1,2,3,4-tetrahydroquinoline
2. 1-[4-(3-Chlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
3. 1-[4-(3-Methoxybenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
4. 1-[4-(3-Cyanobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
5. 1-[4-(3-Aminobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
6. 1-[4-(2,3-Dimethylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
7. 1-[4-(2-Methylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
8. 1-[4-(2-Trifluoromethylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
9. 1-[4-(2-Nitrobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

10. 1-[4-(3,5-Dichlorobenzoylamino)benzoyl]-
1,2,3,4-tetrahydroquinoline
11. 1-[4-(3,3-Dimethylbutyrylamino)benzoyl]-
1,2,3,4-tetrahydroquinoline
12. 1-[4-(2-Cyclohexylacetylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
13. 1-[4-(2-Phenylacetylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
14. 1-(4-Cyclohexylcarbonylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
15. 1-(4-Cycloheptylcarbonylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
16. 1-(4-Cyclooctylcarbonylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
17. 1-(4-Tricyclo[3.3.1.1]decanylcarbonylaminobenzoyl)-1,2,3,4-tetrahydroquinoline
18. 1-[4-(α -Naphthylcarbonylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
19. 1-[4-(3-Thenoyl)benzoyl]-1,2,3,4-tetrahydro-
quinoline
20. 1-[2-(β -Naphthylcarbonylaminobenzoyl)-1,2,3,4-
tetrahydroquinoline
21. 1-[4-(4-Methoxyanilinocarbonyl)benzoyl]-
1,2,3,4-tetrahydroquinoline
22. 1-[4-(2-Methylanilinocarbonyl)benzoyl]-1,2,3,4-
tetrahydroquinoline

23. 1-[4-(3-Chloroanilinocarbonyl)benzoyl]-1,2,3,4-tetrahydroquinoline

24. 1-[4-(3,5-Dichloroanilinocarbonyl)benzoyl]-1,2,3,4-tetrahydroquinoline

25. 1-(4-Cyclohexylaminocarbonylbenzoyl)-1,2,3,4-tetrahydroquinoline

26. 1-(4-Cyclohexylcarbonylaminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine

27. 1-(4-Benzoylaminobenzoyl)-2,3,4,5-tetrahydro-1H-benzazepine

28. 1-[4-(2-Methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

29. 1-[4-(3-Methoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

30. 1-[4-(3-Chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

31. 1-[4-(3-Cyanobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

32. 1-[4-(3,5-Dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

33. 1-[4-(2,3-Dimethylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

34. 1-(4-Cyclohexylcarbonylaminobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine

35. 1-(4-Benzoylaminobenzoyl)-1,2,3,4,5,6-hexahydrobenzazocine

36. 1-[4-(2-Methylbenzoylamino)benzoyl]-
1,2,3,4,5,6-hexahydrobenzazocine
37. 1-[4-(3-Methoxybenzoylamino)benzoyl]-
1,2,3,4,5,6-hexahydrobenzazocine
38. 1-[4-(2,3-Dimethylbenzoylamino)benzoyl]-
1,2,3,4,5,6-hexahydrobenzazocine
39. 1-[4-(3,5-Dichlorobenzoylamino)benzoyl]-
1,2,3,4,5,6-hexahydrobenzazocine
40. 1-(4-Cyclohexylcarbonylamino)benzoyl-1,2,3,5-
tetrahydro-4,1-benzoxazepine
41. 1-[4-(3-Methylbenzoylamino)benzoyl]-1,2,3,5-
tetrahydro-4,1-benzoxazepine
42. 1-[4-(2,3-Dimethylbenzoylamino)benzoyl]-
1,2,3,5-tetrahydro-4,1-benzoxazepine
43. 1-[4-(3,5-Dichlorobenzoylamino)benzoyl]-
1,2,3,5-tetrahydro-4,1-benzoxazepine
44. 3-Methyl-1-(4-cyclohexylcarbonylamino)benzoyl-
1,2,3,4-tetrahydroquinoline
45. 3-Methyl-1-(4-benzoylamino)benzoyl-1,2,3,4-
tetrahydroquinoline
46. 3-Methyl-1-[4-(2-methylbenzoylamino)benzoyl]-
1,2,3,4-tetrahydroquinoline
47. 3-Methyl-1-[4-(3-methoxybenzoylamino)benzoyl]-
1,2,3,4-tetrahydroquinoline
48. 3-Methyl-1-[4-(2,3-dimethylbenzoylamino)-
benzoyl]-1,2,3,4-tetrahydroquinoline

49. 3-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline
50. 4-Methyl-1-(4-cyclohexylcarbonylaminobenzoyl)-1,2,3,4-tetrahydroquinoxaline
51. 4-Methyl-1-[4-(2-methylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoxaline
52. 4-Methyl-1-[4-(2,3-dimethylbenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoxaline
53. 4-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoxaline
54. 2-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline
55. 4-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline
56. 1-[4-(2-Bromobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
57. 1-[4-(3-Nitrobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
58. 1-[4-(3-Trifluoromethylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
59. 1-[4-(3-Ethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
60. 1-[4-(3,5-Dimethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
61. 1-[4-(2-Chloro-4-nitrobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

62. 1-[4-(2,4-Dichlorobenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine
63. 1-[4-(2-Chloro-6-fluorobenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine
64. 1-[4-(2,6-Dimethylbenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine
65. 1-[4-(2-Chloro-4-aminobenzoylamino)benzoyl]-
2,3,4,5-tetrahydro-1H-benzazepine
66. 1-[4-(2-Chloro-4-acetylaminobenzoylamino)-
benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
67. 1-[4-(3-Aminobenzoylamino)benzoyl]-2,3,4,5-
tetrahydro-1H-benzazepine
68. 1-{4-[2-(4-Isopropylaminobutoxy)benzoylamino]-
benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride
69. 1-[4-(3-Hydroxybenzoylamino)benzoyl]-2,3,4,5-
tetrahydro-1H-benzazepine
70. 1-{4-[2-(4-Aminobutoxy)benzoylamino]benzoyl}-
2,3,4,5-tetrahydro-1H-benzazepine
71. 1-{4-[2-(2-Diethylaminoethoxy)benzoylamino]-
benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride
72. 1-{4-[2-(4-Acetylaminobutoxy)benzoylamino]-
benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
73. 1-{4-[2-(6-Phthalimidohexyloxy)benzoylamino]-
benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
74. 1-{4-[2-(6-Morpholinohexyloxy)benzoylamino]-
benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine

75. 1-{4-[2-(6-[4-Methyl-1-piperazinyl]hexyloxy)-benzoylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine-dihydrochloride

76. 1-(3-Methoxy-4-cyclohexylcarbonylamino benzoyl)-2,3,4,5-tetrahydro-1H-benzazepine

77. 1-(3-methoxy-4-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

78. 1-[3-Methyl-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

79. 4-Methyl-1-(4-cyclohexylcarbonylamino benzoyl)-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine hydrochloride

80. 4-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine hydrochloride

81. 4-Methyl-1-[4-(2,3-dimethylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine hydrochloride

82. 4-Methyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine hydrochloride

83. 4-Methyl-1-[4-(3-methoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

84. 4-Methyl-1-[4-(3-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

85. 4-Methyl-1-[4-(2,3,5-trichlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

86. 4-Propyl-1-[4-(2,3-dimethylbenzoylamino)-

benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine
hydrochloride

87. 5-Methyl-1-(4-benzoylamino benzoyl)-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine

88. 5-Methyl-1-(4-cyclohexylcarbonylamino benzoyl)-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine

89. 5-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine

90. 5-Methyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine

91. 5-Methyl-1-[4-(2,3-dimethylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-1,5-benzodiazepine

92. 4-Methyl-1-[3-methoxy-4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

93. 3-(1-Pyrrolidinyl)-1-[4-(2,3-dimethylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

94. 6-Methyl-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

95. 6-Methoxy-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

96. 3-Hydroxymethyl-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

97. 4-Methylamino-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

98. 3-Amino-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

99. 3-Acetylamino-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline
100. 4-Dimethylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
101. 1-[4-(2-t-Butylaminoacetylamino)benzoyl]-2,3,4,5-tetrahydroquinoline-1H-benzazepine
102. 1-{4-[2-(N-Cyclohexyl-N-ethyl)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
103. 1-{4-[2-(1-Piperidiny)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
104. 1-[4-(2-Phenoxyacetylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
105. 1-[4-(2-Phthalimidoacetylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
106. 1-{4-[2-(1,1-Dimethyl-2-phenoxyethyl)aminoacetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
107. 1-{4-[2-(3-Methylphenoxy)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
108. 1-{4-[2-(3-Methoxyanilino)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
109. 1-{4-[2-(β -Naphthyloxy)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
110. 1-{4-[2-(4-Methylanilino)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
111. 1-{4-[2-(3-Methoxyphenoxy)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine

112. 1-[4-(4-Pyridylcarbonylaminobenzoyl)]-2,3,4,5-tetrahydro-1H-benzazepine

113. 1-{4-[2-(2,4-Dimethylanilino)acetylamino]-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

114. 1-{4-[2-(N-Ethylanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

115. 1-{4-[2-(N-Allylanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

116. 1-{4-[2-(2-Chloroanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

117. 1-{4-[2-(4-Acetyloxybutoxy)benzoylamino]-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

118. 1-[4-(2-Carboxymethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

119. 1-[4-(2-Carbamoylmethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

120. 1-{4-[2-(4-Hydroxybutoxy)benzoylamino]-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

121. 1-[4-(2-Ethoxycarbonylmethoxybenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

122. 6-Fluoro-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

123. 6-Fluoro-1-{4-[di-(3,5-dichlorobenzoyl)amino]-benzoyl]-1,2,3,4-tetrahydroquinoline

124. 1-[4-(2-Diethylaminocarbonylmethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

125. 1-{4-[2-(2-[(N-(2-hydroxyethyl)-N-methyl-amino]ethoxy)benzoylamino)benzoyl]}-2,3,4,5-tetrahydro-1H-benzoazepine hydrochloride
126. 1-[4-(2-Methylanilinocarbonylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
127. 1-[4-(2-Chlorophenylsulfonylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
128. 1-{4-[2-(4-Aminomethylanilino)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
129. 1-{4-[2-(N-Phenyl-N-(3-acetylaminopropyl)-amino)acetylamino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
130. 1-{4-[2-(N-Phenyl-N-propargylamino)acetyl-amino]benzoyl}-2,3,4,5-tetrahydro-1H-benzazepine
131. 4-(N-Methyl-N-ethylamino)-1-[4-(3,5-dichloro-benzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
132. 5-Dimethylamino-1-[4-(2,4-dichlorobenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
133. 4-Dimethylamino-1-[3-methoxy-4-(2-methyl-benzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline
134. 5-Dimethylamino-1-[3-methoxy-4-(2-chloro-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
135. 1-[4-(2,3-Dimethylbenzoylamino)benzoyl]-4-ethyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine
136. 1-[4-(3,5-Dichlorobenzoylamino)benzoyl]-4-isopropyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine
137. 1-[4-(2-Methylbenzoylamino)benzoyl]-5-methyl-

1,2,3,4,5,6-hexahydro-1,5-benzodiazocine

138. 1-[4-(2-Methylbenzoylamino)benzoyl]-1,2,3,4-tetrahydro-5,1-benzoxazepine

139. 5-Oxo-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

140. 4-Methyl-1-[2-chloro-4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

141. 5-Methylamino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

142. 5-(N-Acetyl-N-methylamino)-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

143. 5-Hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

144. 4-Dimethylamino-1-[3-methoxy-4-(2,3-dimethylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

145. 4-Dimethylaminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

146. 4-Dimethylaminomethyl-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline

147. 5-Methoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

148. 4-Methyl-1-[3-methyl-4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine

149. 5-Methoxy-1-[4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

150. 4-Dimethylamino-1-[4-(2-chlorobenzoylamino)-

benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

151. 4-Acetyloxy-1-[4-(2-methylbenzoylamino)-benzoyl]-1,2,3,4-tetrahydroquinoline

152. 5-Hydroxyimino-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

153. 5-Acetyloxy-1-[4-(2-chlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

154. 5-Ethoxycarbonylmethoxy-1-[4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

155. 4-Allylamino-1-[4-(3,5-dichlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

156. 5-Dimethylamino-1-[3-methoxy-4-(2,3,5-trichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

157. 4-[4-(2-Methylbenzoylamino)benzoyl]-3,4-dihydro-2H-1,4-benzothiazine

158. 5-Dimethylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

159. 5-Dimethylamino-1-[4-(2-methylanilino-carbonyl)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

160. 5-Ethoxycarbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

161. 5-(4-dimethylaminobutoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

162. 5-Carboxymethoxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

163. 5-Dimethylaminocarbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

164. 5-Carbamoylmethoxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

165. 5-Dimethylamino-1-[3-ethoxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

166. 5-[4-(2-Methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1,5-benzothiazepine

167. 5-Amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

168. 5-Dimethylamino-1-[3-hydroxy-4-[2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

169. 5-n-Propylamino-1-[4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

170. 5-Dimethylamino-1-[3-benzyloxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

171. 5-[4-(2-Methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1,5-benzothiazepin-1-oxide

172. 5-[3-(Phthalimid-1-yl)-propoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

173. 5-(3-Aminopropoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

174. 5-(3-Acetylaminopropoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

175. 5-Dimethylamino-1-[2-chloro-4-(2-t-butylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
176. 5-Methylamino-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
177. 5-Dimethylamino-1-[2-methoxy-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
178. 5-Hydroxy-1-[4-(3,5-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
179. 5-Dimethylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
180. 5-Dimethylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
181. 5-Methylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
182. 5-Methylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
183. 5-Dimethylamino-1-[2-methoxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
184. 5-Dimethylamino-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
185. 5-Methylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
186. 5-Cyclopropylamino-1-[2-chloro-4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
187. 5-Dimethylaminocarbonyloxy-1-[4-(2-methyl-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

188. 5-Dimethylamino-1-[4-(2-trifluoromethyl-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

189. 5-Dimethylamino-1-[3-(2-chlorobenzoyloxy)-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

190. 5-(N-Methyl-N-Allylamino)-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

191. 5-Carbamoyloxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

192. 1-[4-(2-Methylbenzoylamino)benzoyl]-1,2,3,5-tetrahydro-4,1-benzothiazepine

193. 4-Oxo-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

194. 1-[4-(2-Methylbenzoylamino)benzoyl]-1,2,3,5-tetrahydro-4,1-benzothiazepine-1,1-dioxide

195. 5-Methylaminocarbonylmethoxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

196. 5-Methylaminocarbonyloxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

197. 5-Dimethylamino-1-[2-dimethylamino-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

198. 5-Methylamino-1-[2-chloro-4-(2-trifluoromethylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-

benzazepine

199. 5-Cyclopropylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

200. 5-Cyclopropylamino-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

201. 5-Allylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

202. 5-(1-Piperidinyl)-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

203. 5-(4-Benzyl-1-piperazinyl)-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

204. 5-(1-Pyrrolidinyl)-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

205. 5-(4-Acetyl-1-piperazinyl)-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

206. 5-(4-Methyl-1-piperazinyl)-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

207. 1-[4-(2-Chlorobenzoylamino)benzoyl]-2,3-dihydro-1H-benzazepine

208. 5-Methyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

209. 5-Methylidene-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

210. 5-Hydroxy-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

211. 5-(1-Morpholino)-1-[4-(2-chlorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

212. 5-Dimethylamino-1-[4-(2-fluorobenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

213. 5-Dimethylamino-1-[4-(2,4-difluorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

214. 4-Hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

215. 5-Hydroxymethyl-1-[4-(2-methylbenzoylamino)-benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

216. 5-Dimethylamino-4-hydroxy-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

217. 1-[4-(2-Methylbenzoylamino)benzoyl]-1,2-dihydroquinoline

218. 5-Dimethylamino-1-[2-methyl-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine (the compound of Example 979)

219. 5-Dimethylamino-1-[2-methyl-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

220. 5-Dimethylamino-1-[2-methyl-4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

221. 5-Methylamino-1-[2-chloro-4-[2-(N-ethyl-anilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

222. 5-Hydroxy-1-[2-chloro-4-[2-(N-ethylanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

223. 5-Dimethylamino-1-[2-fluoro-4-(2-chloro-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

224. 5-Methylamino-4-hydroxy-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine · hydrochloride

225. 5-Hydroxymethyl-5-hydroxy-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

226. 5-Dimethylamino-1-[2-fluoro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

227. 5-Dimethylamino-1-[3-methyl-4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

228. 5-(N-Methyl-N-ethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

229. 5-Ethylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

230. 5-Dimethylamino-1-[4-(3,5-difluorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

231. 5-Acetyloxymethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

232. 5-Dimethylamino-1-[3-fluoro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

233. 4,4-Dimethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

234. 5-Acetyloxyimino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

235. 5-Methylsulfonyloxymethyl-1-[4-(2-methyl-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

236. 5,5-Epoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

237. 5-Hydroxymethyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

238. 5-Hydroxy-1-[2-methoxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

239. 5-Dimethylamino-1-[4-(2-carbamoylmethoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

240. 5-Hydroxy-6-methyl-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

241. 5-(2-Dimethylaminoethyl)amino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

242. 5-Hydroxymethyl-5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

243. 5-Methylaminomethyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

244. 5-Aminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

245. 5-[N-Methyl-N-(3-methoxy-2-hydroxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

246. 5-[N-Methyl-N-(3-diethylamino-2-hydroxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

247. 5-Dimethylamino-1-[3-methoxy-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
248. 5-Dimethylamino-1-[3-methoxy-4-(2,4-dichlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
249. 5-Dimethylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine hydrochloride
250. 5-Azidomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
251. 7-[4-(2-Chlorobenzoylamino)benzoyl]-1-methyl-1,2,3,4a,5,6,7,11b-octahydro-3-oxo[1]benzazepino[4,5-b]-[1,4]oxazine
252. 5-Benzylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
253. 5-Amino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
254. 5-Dimethylamino-4-methyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
255. 5-Acetylaminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
256. 5-Hydroxy-4-methyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
257. 5-[2-(2-Pyridyl)ethylamino]-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine
258. 5-(N-Methyl-N-methanesulfonylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-

benzazepine

259. 5-(N-Methyl-N-benzoylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

260. 5-Ethoxycarbonylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

261. 5-Methyl-5-hydroxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

262. 5-(N-Methyl-N-ethoxycarbonylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

263. 5-Cyclopentylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

264. 5-[N-Methyl-N-(2,3-dihydroxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

265. 5-(N-Methyl-N-cyanomethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

266. 5-(N-Methyl-N-carbamoylmethylamino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

267. 5-(N-Methyl-N-[3-(3,4,5,6-tetrahydro-2H-pyran-2-yloxy)propyl]amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

268. 5-Dimethylaminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

269. 5-Formylaminomethyl-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

270. 5-[N-Methyl-N-(3-acetyloxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

271. 5-[N-Methyl-N-(3-hydroxypropyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

272. Potassium {1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepin-5-yl}imino-o-sulfonate

273. 5-Dimethylamino-1-(4-benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

274. 5-(1-Benzyl-4-piperidinyl)amino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

275. 5-(2-Dimethylaminoacetyloxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

276. 5-Dimethylamino-1-[4-(3-methoxybenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

277. 5-[(4-Methyl-1-piperazinyl)carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

278. 5-Morpholinocarbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

279. 5-Thiomorpholinocarbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-

benzazepine

280. 5-Anilinocarbonylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

281. 5-(1-Oxothiomorpholino)carbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

282. 5-Hydrazino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

283. 5-Methylaminocarbonylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

284. 5-[(2- α -Carbamoyl-1-pyrrolidinyl)carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

285. 5-(Carbamoylmethylaminocarbonylmethoxy)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

286. 5-(1,1-Dioxothiomorpholino)carbonylmethoxy-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

287. 7-Chloro-5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

288. 5-[(4-Acetyl-1-piperazinyl)carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

289. 5-Dimethylamino-1-[4-(3-nitrobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

290. 5-[(4-Pyridyl)methylaminocarbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

291. 5-[2-(Methylamino)acetyl amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

292. 5-Dimethylamino-1-[4-(3-aminobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

293. 5-[[N-Methyl-N-(2-hydroxyethyl)amino]carbonylmethoxy]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

294. 5-Dimethylamino-1-[3-(2-diethylaminoethoxy)-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

295. 5-[N-Methyl-N-(dimethylaminocarbonylmethyl)amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

296. Potassium 2-[N-methyl-N-{1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepin-5-yl}amine]acetate

297. 5-[N-Methyl-N-[2-(1-imidazolyl)acetyl]amino]-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

298. 5-Dimethylamino-1-[4-(2-dimethylaminobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

299. 5-[(2-Aminoacetyl)amino]-1-[4-(2-methyl-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

300. 5-Dimethylamino-1-[4-(3-acetylaminobenzoyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

301. 5-(2-t-Butoxycarbonylaminoacetyl-amino)-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

302. 5-Methylamino-7-chloro-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

303. 5-Dimethylamino-7-chloro-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

304. 5-Dimethylamino-7-chloro-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

305. 5-Dimethylamino-1-[4-(phenylacetyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

306. 5-Dimethylamino-1-[4-(3-phenylpropionyl-amino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

307. 5-Methylamino-7-chloro-1-[4-[(N-ethylanilino)acetyl-amino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

308. 5-Dimethylamino-7-chloro-1-[4-[(N-ethylanilino)acetyl-amino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

309. 5-Dimethylamino-1-[4-(2-bromobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

310. 5-Cyclopropylamino-7-chloro-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

311. 5-Cyclopropylamino-7-chloro-1-[4-(2-chloro-

benzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

312. 5-hydroxy-1-[4-[2-(4-isopropylaminobutoxy)-benzoylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

313. 5-Dimethylaminocarbonylmethoxy-1-[4-[(N-ethyl-anilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

314. 5-(N-Methyl-N-ethylamino)-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

315. 5-Dimethylamino-1-[4-[(2-chloroanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

316. 5-Dimethylamino-1-[4-[(2-methylanilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

317. 5-Dimethylamino-1-[4-[(N-methyl-2-methyl-anilino)acetylamino]benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

318. 5-Methylamino-9-chloro-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

319. 5-Dimethylamino-1-[4-(phenoxyacetylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

320. 6-Methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-1,2,3,4,5,6-hexahydrobenzazocine

321. 5-Methylamino-7-chloro-1-[3-methoxy-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine

322. 5-Cyclopropylamino-7-chloro-1-[3-methoxy-4-(2-

chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-
benzazepine

323. 5-Methylamino-7-chloro-1-[3-methoxy-4-(2-
methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-
benzazepine

Table 10

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
26	0.071	78	0.10
27	0.095	88	0.34
28	0.056	90	0.38
29	0.15	114	0.011
30	0.15	115	0.012
32	0.30	116	0.04
33	0.092	117	0.22
36	0.41	119	0.049
46	0.40	120	0.29
56	0.025	121	0.45
57	0.46	124	0.15
58	0.40	125	0.091
59	0.31	130	0.023
60	0.18	143	0.15
62	0.098	147	0.28
63	0.14	161	0.14
64	0.069	163	0.22
67	0.34	164	0.15
68	0.013	172	0.26
69	0.066	173	0.15
70	0.041	174	0.14
71	0.18	187	0.45
72	0.12	188	0.47
74	0.10	192	0.054
75	0.069	193	0.17
76	0.042	195	0.17
77	0.085	196	0.40

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
207	0.16	284	0.29
208	0.11	285	0.18
209	0.074	286	0.40
214	0.27	287	0.064
215	0.13	288	0.26
222	0.096	290	0.21
231	0.16	293	0.19
235	0.088	298	0.29
236	0.16	302	0.071
238	0.39	303	0.19
244	0.23	304	0.21
250	0.19	307	0.024
252	0.36	308	0.11
255	0.046	309	0.43
256	0.049	310	0.065
266	0.29	311	0.078
269	0.48	312	0.056
274	0.11	313	0.032
275	0.18	315	0.38
277	0.23	316	0.47
278	0.30	321	0.059
279	0.15	322	0.044
280	0.47	323	0.064
281	0.18		

Pharmacological TestExperiment 2 : V₂ receptor binding assay

Using rat kidney plasma membrane preparations prepared according to O. Hechter's method [cf: J. Bio. Chem., 253, 3211 (1978)], the plasma membrane (100000dpm, 4×10^{-10} M) of [³H]-Arg-vasopressin and a test compound (0.6 mg, 10^{-10} - 10^{-5} M) are incubated at 4°C for 3 hours in 100 mM Tris-HCl buffer (pH: 8.0, 250 µl) containing 5 mM MgCl₂, 1 mM EDTA and 0.1 % BSA. After incubation, the mixture is filtered using the glass filter (GF/F) so as to separate the membrane preparation combined with vasopressin and then washed twice with the buffer (5 ml). This glass filter is taken out and mixed with liquid scintillation cocktail. The amount of [³H]-vasopressin combined with the membrane is measured by liquid scintillation counter and the rate of the inhibitory effect of the test compound is estimated according to the following equation.

$$\text{Rate of the inhibitory effect (\%)} = 100 - \frac{C_1 - B_1}{C_0 - B_1} \times 100$$

C¹: The amount of [³H]-vasopressin combined with the membrane in the presence of the test compound (in prescribed amount).

C⁰: The amount of [³H]-vasopressin combined with the membrane in the absence of the test compound.

B¹: The amount of [³H]-vasopressin combined

with the membrane in the presence of the excess amount of vasopressin (10^{-6} M).

The results are expressed as IC_{50} values, which is the concentration of the test compound required to achieve the inhibitory effect in the rate of 50 %.

The results are shown in the following Table 6.

Table 11

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
1	0.98	28	0.018
2	0.20	29	0.069
3	0.40	30	0.029
4	0.58	31	0.098
5	1.2	32	0.016
6	0.076	33	0.007
7	0.20	34	0.049
8	0.32	35	0.20
9	0.53	36	0.028
10	0.082	37	0.16
11	1.05	38	0.029
12	1.97	39	0.071
13	1.02	40	0.33
14	0.23	41	0.20
15	0.13	42	0.063
16	0.17	43	0.17
17	0.23	44	0.050
18	1.0	45	0.19
19	1.7	46	0.018
20	1.4	47	0.20
21	1	48	0.021
22	0.33	49	0.063
23	1.07	50	1.3
24	1.09	51	0.40
25	1.67	52	0.32
26	0.025	53	1.6
27	0.070	54	0.11

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
55	0.091	86	0.58
56	0.037	87	0.046
57	0.16	88	0.021
58	0.14	89	0.035
59	0.24	90	0.014
60	0.15	91	0.005
61	0.090	92	0.41
62	0.023	93	0.52
63	0.046	94	0.095
64	0.007	95	0.089
65	0.081	96	0.039
66	0.45	97	0.024
67	0.050	98	0.45
68	0.19	99	1.6
69	0.12	100	0.011
70	0.012	101	0.60
71	0.085	102	0.29
72	0.16	103	0.54
74	0.51	104	0.37
75	0.30	105	0.72
76	0.017	106	0.44
77	0.090	107	0.032
78	0.084	108	0.12
79	0.53	109	0.49
80	0.070	110	0.044
81	0.15	111	0.087
82	0.17	112	0.29
83	0.73	113	0.28
84	0.11	114	0.006
85	0.068	115	0.006

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
116	0.039	146	0.056
117	0.24	147	0.009
118	0.55	148	0.34
119	0.059	149	0.004
120	0.28	150	0.14
121	0.18	151	0.18
122	0.10	152	0.039
123	0.10	153	0.063
124	0.13	154	0.063
125	0.28	155	0.028
126	0.062	156	0.15
127	0.99	157	0.38
128	0.23	158	0.018
129	0.29	159	0.020
130	0.007	160	0.020
131	0.027	161	0.009
132	0.013	162	0.059
133	0.022	163	0.009
134	0.048	164	0.010
135	0.081	165	0.098
136	0.18	166	0.070
137	0.41	167	0.032
138	0.11	168	0.083
139	0.10	169	0.071
140	0.024	170	0.25
141	0.010	171	0.87
142	0.008	172	0.023
143	0.008	173	0.008
144	0.02	174	0.007
145	0.06	175	0.038

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
176	0.004	206	0.088
177	0.15	207	0.045
178	0.012	208	0.007
179	0.040	209	0.004
180	0.034	210	0.004
181	0.038	211	0.12
182	0.005	212	0.035
183	0.26	213	0.033
184	0.023	214	0.058
185	0.005	215	0.006
186	0.030	216	0.91
187	0.029	217	0.37
188	0.039	218	0.022
189	0.087	219	0.023
190	0.082	220	0.026
191	0.009	221	0.024
192	0.011	222	0.010
193	0.036	223	0.022
194	0.21	224	0.38
195	0.010	225	0.030
196	0.013	226	0.019
197	0.99	227	0.029
198	0.040	228	0.029
199	0.019	229	0.029
200	0.024	230	0.020
201	0.023	231	0.007
202	0.14	232	0.020
203	0.070	233	0.15
204	0.11	234	0.14
205	0.074	235	0.006

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
236	0.006	267	0.12
237	0.041	268	0.018
238	0.020	269	0.003
239	0.17	270	0.046
240	0.022	271	0.030
241	0.006	272	0.40
242	0.17	273	0.027
243	0.40	274	0.024
244	0.018	275	0.018
245	0.059	276	0.032
246	0.027	277	0.016
247	0.048	278	0.013
248	0.060	279	0.008
250	0.12	280	0.045
251	0.094	281	0.011
252	0.063	282	0.38
253	0.052	283	0.096
254	0.016	284	0.019
255	0.005	285	0.008
256	0.004	286	0.019
257	0.045	287	0.007
258	0.20	288	0.015
259	0.25	289	0.071
260	0.13	290	0.021
261	0.011	291	0.13
262	0.029	292	0.18
263	0.053	293	0.065
264	0.030	294	0.33
265	0.025	295	0.026
266	0.013	296	0.25

Test Comp. No.	IC ₅₀ (μ M)	Test Comp. No.	IC ₅₀ (μ M)
297	0.051	311	0.013
298	0.10	312	0.29
299	0.22	313	0.012
300	0.48	314	0.096
301	0.14	315	0.025
302	0.011	316	0.060
303	0.025	317	0.072
304	0.024	318	0.060
305	0.038	319	0.058
306	0.077	320	0.039
307	0.010	321	0.012
308	0.023	322	0.025
309	0.015	323	0.014
310	0.008		

Experiment 3: Anti-antidiuretic activity (effect on endogenous ADH)

A test compound or solvent (dimethylformamide) is administered into a caudal vein of untreated, unrestrained SD rats (male, weight: 300 - 350 g) and the amount of urine, which is spontaneously excreted for a period of 2 hours thereafter, is collected and measured by using a metabolic gauge. During this measurement, the rats are allowed to take water and feed freely.

The amount of urine of control rats (solvent-treated group) is regarded as 100 %, and the results are expressed as ED₃ value, which is the dose of the test compound to be required to excrete the urine by three times than that of the control rats. The results are shown in the following Table 7.

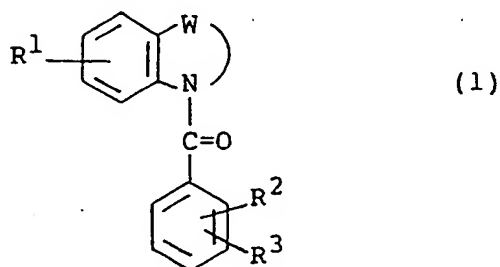
Table 12

Test compound No.	ED ₃ (mg/kg)
6	10
33	1.9
178	4.2
249	0.4 *)

*) : Physiological saline solution was used as a solvent instead of dimethylformamide.

What is claimed is:

1. A benzoheterocyclic compound of the following formula:



wherein R^1 is hydrogen atom, a halogen atom, a lower alkyl, an amino having optionally a lower alkyl substituent, or a lower alkoxy,

R^2 is hydrogen atom, a halogen atom, a lower alkoxy, a phenyl(lower)alkoxy, hydroxy, a lower alkyl, an amino having optionally a lower alkyl substituent, a carbamoyl-substituted lower alkoxy, an amino-substituted lower alkoxy having optionally a lower alkyl substituent, or a benzoyloxy which has optionally a halogen substituent on the phenyl ring,

R^3 is a group of the formula: $-N \begin{smallmatrix} R^4 \\ R^5 \end{smallmatrix}$ or a group of

the formula: $-C \begin{smallmatrix} O \\ || \\ N \begin{smallmatrix} R^{11} \\ R^{12} \end{smallmatrix} \end{smallmatrix}$,

R^4 is hydrogen atom, a benzoyl which has optionally a halogen substituent on the phenyl ring, or a lower alkyl,

R^5 is a group of the formula: $-CO-C_6H_4-(R^{16})_m$
[wherein R^{16} is a halogen atom; a lower alkyl which has

optionally a substituent selected from a halogen atom and hydroxy; hydroxy; a lower alkoxy; a lower alkanoyloxy; a lower alkylthio; a lower alkanoyl; carboxy; a lower alkoxy-carbonyl; cyano; nitro; an amino which has optionally a substituent selected from a lower alkyl and a lower alkanoyl; phenyl; a cycloalkyl; a lower alkanoyloxy-substituted lower alkoxy; a carboxy-substituted lower alkoxy; a halogen-substituted lower alkoxy; a carbamoyl-substituted lower alkoxy; a hydroxy-substituted lower alkoxy; a lower alkoxy-carbonyl-substituted lower alkoxy; a phthalimido-substituted lower alkoxy; an aminocarbonyl-lower alkoxy having a lower alkyl substituent; or a group of the

formula: $-O-A-N \begin{matrix} R^6 \\ R^7 \end{matrix}$ (A is a lower alkylene, and R^6 and R^7 are

the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a lower alkanoyl, or benzoyl, or R^6 and R^7 may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from piperidinyl and a lower alkyl); and m is an integer of 0 to 3],

a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanylcarbonyl, naphthyl-carbonyl, pyridylcarbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substi-

tuents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula: $-\text{CO}-\text{C}_6\text{H}_4\text{N-R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxy-carbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the formula:

$-\text{CO}-\text{B}-(\text{CO})_n-\text{N}\begin{matrix} \text{R}^9 \\ \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together

with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl),

R^{11} is hydrogen atom or a lower alkyl,

R^{12} is a cycloalkyl, or a phenyl which has optionally 1 to 3 substituents selected from a lower alkoxy, a lower alkyl and a halogen atom,

W is a group of the formula: $-(CH_2)_p-$ (p is an integer of 3 to 5), or a group of the formula: $-CH=CH-(CH_2)_q-$ (q is an integer of 1 to 3), the carbon atom of these groups:

$-(CH_2)_p-$ and $-CH=CH-(CH_2)_q-$ being optionally replaced by oxygen atom, sulfur atom, sulfinyl, sulfonyl, or a group of

the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom, a cycloalkyl, or a lower alkyl), and further said $-(CH_2)_p-$ and $-CH=CH-(CH_2)_q-$ groups having optionally 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxy-carbonyl, carboxy, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkyl sulfonyloxy-lower alkyl, an azido-lower alkyl, a group of the formula: $\begin{array}{c} \diagup \\ \diagdown \end{array} O$, an aminocarbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxy-carbonyl-

substituted lower alkoxy, a carboxy-substituted lower alkoxy, an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxy-imino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula:

$$\text{R}^{81}-\text{N}-\text{CH}_2\text{COO}- \quad (\text{R}^{81} \text{ is hydrogen atom or a lower alkyl}),$$

hydrazino, pyrrolyl, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, a group of the formula:

$$-\text{O}-\text{A}-\text{CO}-\text{N} \begin{array}{l} \nearrow \text{R}^{82} \\ \searrow \text{R}^{83} \end{array} \quad (\text{A is as defined above, and R}^{82} \text{ and R}^{83} \text{ are the same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R}^{82} \text{ and R}^{83} \text{ may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl}), \text{ and a group of the formula:}$$

$$-(\text{CO})_n-\text{N} \begin{array}{l} \nearrow \text{R}^{14} \\ \searrow \text{R}^{15} \end{array} \quad (\text{wherein n is as defined above, and R}^{14} \text{ and R}^{15}$$

are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower

alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, benzoyl, a lower alkoxycarbonyl, anilinocarbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxycarbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent on the piperidinyl ring, a halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxycarbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxycarbonyl, or R^{14} and R^{15} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen, wherein the heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl or a lower alkanoyl), and a salt thereof.

2. The compound according to claim 1, wherein R^1 in the formula (1) is hydrogen atom, or a salt thereof.

3. The compound according to claim 1, wherein R^1

in the formula (1) is a halogen atom, and a salt thereof.

4. The compound according to claim 1, wherein R^1 in the formula (1) is a lower alkyl, an amino having optionally a lower alkyl substituent, or a lower alkoxy, and a salt thereof.

5. The compound according to claim 2, wherein R^2 is hydrogen atom, and a salt thereof.

6. The compound according to claim 2, wherein R^2 is a halogen atom, a lower alkoxy, or a lower alkyl, and a salt thereof.

7. The compound according to claim 2, wherein R^2 is a phenyl-lower alkoxy; hydroxy; an amino having optionally a lower alkyl substituent; a carbamoyl-substituted lower alkoxy; an amino-substituted lower alkoxy having optionally a lower alkyl substituent; or a benzoyloxy having optionally a halogen substituent on the phenyl ring thereof, and a salt thereof.

8. The compound according to claim 3, wherein R^2 is hydrogen atom, and a salt thereof.

9. The compound according to claim 3, wherein R^2 is a halogen atom, a lower alkoxy, or a lower alkyl, and a salt thereof.

10. The compound according to claim 3, wherein R^2 is a phenyl-lower alkoxy; hydroxy; an amino having optionally a lower alkyl substituent; a carbamoyl-substituted lower alkoxy; an amino-substituted lower alkoxy having optionally a lower alkyl substituent; or a benzoyloxy

having optionally a halogen substituent on the phenyl ring thereof, and a salt thereof.

11. The compound according to claim 4, wherein R^2 is hydrogen atom, and a salt thereof.

12. The compound according to claim 4, wherein R^2 is a halogen atom, a lower alkoxy, or a lower alkyl, and a salt thereof.

13. The compound according to claim 4, wherein R^2 is a phenyl-lower alkoxy; hydroxy; an amino having optionally a lower alkyl substituent; a carbamoyl-substituted lower alkoxy; an amino-substituted lower alkoxy having optionally a lower alkyl substituent; or a benzoyloxy having optionally a halogen substituent on the phenyl ring thereof, and a salt thereof.

14. The compound according to claim 5, wherein R^3 is a group of the formula: $-NR^4R^5$ (R^4 and R^5 are as defined in claim 1), and a salt thereof.

15. The compound according to claim 5, wherein R^3 is a group of the formula: $-CO-NR^{11}R^{12}$ (R^{11} and R^{12} are as defined in claim 1), and a salt thereof.

16. The compound according to claim 6, wherein R^3 is a group of the formula: $-NR^4R^5$ (R^4 and R^5 are as defined in claim 1), and a salt thereof.

17. The compound according to claim 6, wherein R^3 is a group of the formula: $-CO-NR^{11}R^{12}$ (R^{11} and R^{12} are as defined in claim 1), and a salt thereof.

18. The compound according to claim 8, wherein R^3

is a group of the formula: $-NR^4R^5$ (R^4 and R^5 are as defined in claim 1), and a salt thereof.

19. The compound according to claim 8, wherein R^3 is a group of the formula: $-CO-NR^{11}R^{12}$ (R^{11} and R^{12} are as defined in claim 1), and a salt thereof.

20. The compound according to claim 9, wherein R^3 is a group of the formula: $-NR^4R^5$ (R^4 and R^5 are as defined in claim 1), and a salt thereof.

21. The compound according to claim 9, wherein R^3 is a group of the formula: $-CO-NR^{11}R^{12}$ (R^{11} and R^{12} are as defined in claim 1), and a salt thereof.

22. The compound according to claim 14, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:

$-CO-\text{C}_6\text{H}_4(R^{16})_m$ (wherein R^{16} and m are as defined in claim 1), and a salt thereof.

23. The compound according to claim 14, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-

substituted lower alkanoyl, a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4-\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxy-carbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N}(\text{R}^9)(\text{R}^{10})$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and

piperidinyl), and a salt thereof.

24. The compound according to claim 14, wherein R^4 is a lower alkyl, and a salt thereof.

25. The compound according to claim 16, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4(\text{R}^{16})_m$ (wherein R^{16} and m are as defined in claim 1), and a salt thereof.

26. The compound according to claim 16, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an

amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl

on the phenyl ring, quinolylsulfonyl, or a group of the

formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \nearrow \text{R}^9 \\ \searrow \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxycarbonyl and piperidinyl), and a salt thereof.

27. The compound according to claim 16, wherein R^4 is a lower alkyl, and a salt thereof.

28. The compound according to claim 7, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4(\text{R}^{16})_m$ (wherein R^{16} and m are as defined in claim 1), and a salt thereof.

29. The compound according to claim 7, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkylcarbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthylcarbonyl, pyridylcarbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

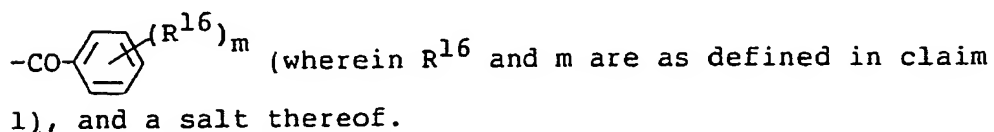
$-\text{CO}-\text{C}_6\text{H}_4-\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxy-carbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the formula:

$-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \text{R}^9 \\ \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3

substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl), and a salt thereof.

30. The compound according to claim 7, wherein R^4 is a lower alkyl, and a salt thereof.

31. The compound according to claim 18, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:



32. The compound according to claim 18, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower

alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4-\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxy-carbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

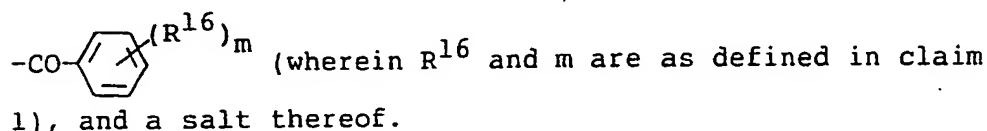
formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \text{R}^9 \\ \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with

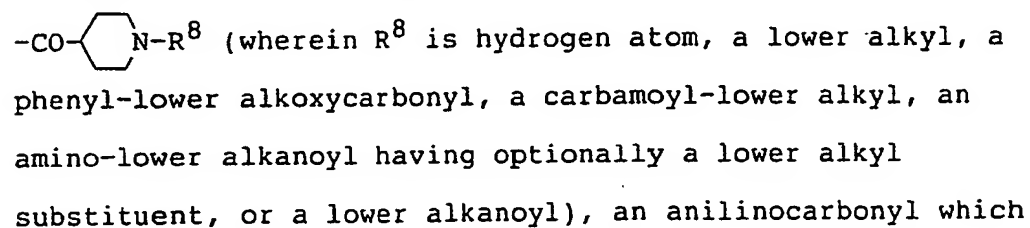
or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl), and a salt thereof.

33. The compound according to claim 18, wherein R^4 is a lower alkyl, and a salt thereof.

34. The compound according to claim 20, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:



35. The compound according to claim 20, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:



has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \nearrow \text{R}^9 \\ \searrow \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl), and a salt thereof.

36. The compound according to claim 20, wherein R^4 is a lower alkyl, and a salt thereof.

37. The compound according to claim 10, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4(\text{R}^{16})_m$ (wherein R^{16} and m are as defined in claim 1), and a salt thereof.

38. The compound according to claim 10, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkylcarbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthylcarbonyl, pyridylcarbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxy-carbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

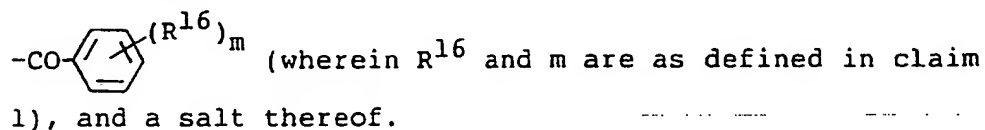
formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \text{R}^9 \\ \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having

optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl), and a salt thereof.

39. The compound according to claim 10, wherein R^4 is a lower alkyl, and a salt thereof.

40. The compound according to claim 11, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:



41. The compound according to claim 11, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl,

thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxycarbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

$\text{-CO-}\text{C}_6\text{H}_4\text{-N-R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a phenyl-lower alkoxycarbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

formula: $\text{-CO-B-(CO)}_n\text{-N}\begin{matrix} \text{R}^9 \\ \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower

alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxy-carbonyl and piperidinyl), and a salt thereof.

42. The compound according to claim 11, wherein R^4 is a lower alkyl, and a salt thereof.

43. The compound according to claim 12, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4(\text{R}^{16})_m$ (wherein R^{16} and m are as defined in claim 1), and a salt thereof.

44. The compound according to claim 12, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy-carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl-carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl-carbonyl, pyridyl-carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy-carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:

$-\text{CO}-\text{C}_6\text{H}_4\text{N}-\text{R}^8$ (wherein R^8 is hydrogen atom, a lower alkyl, a

phenyl-lower alkoxycarbonyl, a carbamoyl-lower alkyl, an amino-lower alkanoyl having optionally a lower alkyl substituent, or a lower alkanoyl), an anilinocarbonyl which has optionally a lower alkyl substituent on the phenyl ring, phenoxycarbonyl, a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, quinolylsulfonyl, or a group of the

formula: $-\text{CO}-\text{B}-(\text{CO})_n-\text{N} \begin{matrix} \nearrow \text{R}^9 \\ \searrow \text{R}^{10} \end{matrix}$ (wherein B is a lower alkylene, n

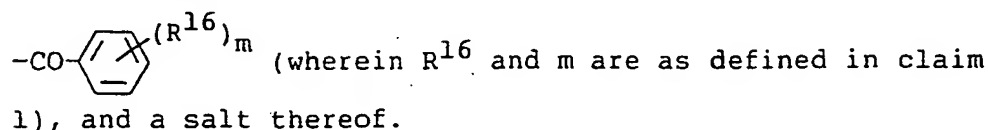
is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3

substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxycarbonyl and piperidinyl), and a salt thereof.

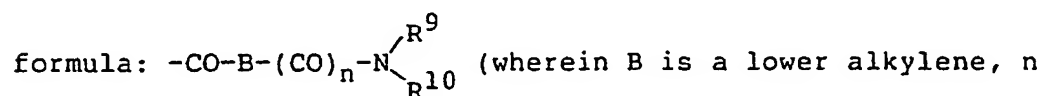
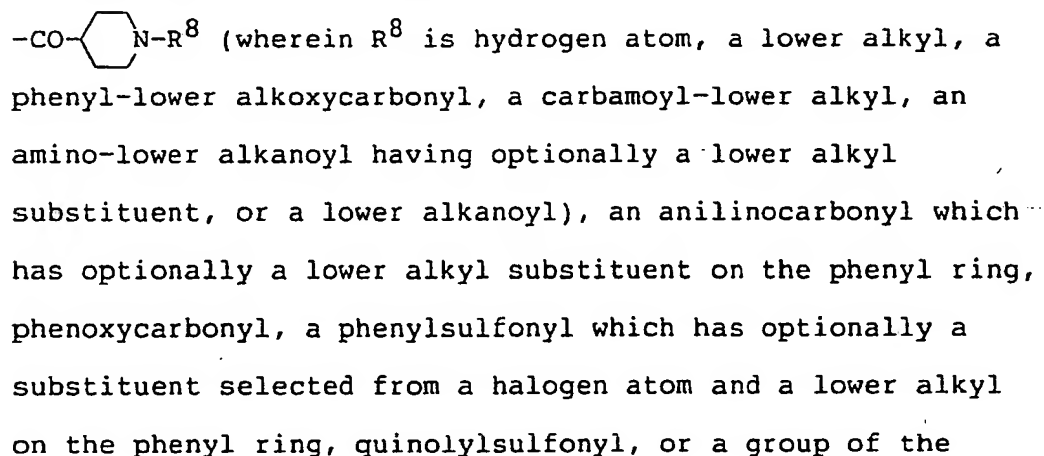
45. The compound according to claim 12, wherein R^4

is a lower alkyl, and a salt thereof.

46. The compound according to claim 13, wherein R^4 is hydrogen atom, and R^5 is a group of the formula:



47. The compound according to claim 13, wherein R^4 is hydrogen atom and R^5 is a phenyl-lower alkoxy carbonyl, a lower alkanoyl, a phenyl-lower alkanoyl, a cycloalkyl-lower alkanoyl, a cycloalkyl carbonyl, tricyclo[3.3.1.1]decanyl-carbonyl, naphthyl carbonyl, pyridyl carbonyl, furoyl, thenoyl, a phenoxy-lower alkanoyl which phenyl ring has optionally 1 to 3 substituents selected from a lower alkyl, a lower alkoxy and an amino having optionally a lower alkanoyl substituent, a phthalimido-substituted lower alkanoyl, a lower alkoxy carbonyl-lower alkanoyl, a carboxy-lower alkanoyl, a naphthyloxy-lower alkanoyl, a halogen-substituted lower alkanoyl, a group of the formula:



is an integer of 0 or 1, and R^9 and R^{10} are the same or different and are each hydrogen atom, a lower alkyl having optionally a hydroxy substituent, a cycloalkyl, a phenyl-lower alkyl, a lower alkanoyl, a lower alkenyl, a phenoxy-lower alkyl, a phenyl which has optionally 1 to 3 substituents selected from an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkyl, a lower alkoxy and a halogen atom, a phthalimido-substituted lower alkyl, an amino-lower alkyl having optionally a lower alkanoyl substituent, a lower alkynyl, or an amino-lower alkyl having optionally a lower alkyl substituent, or R^9 and R^{10} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen atom wherein the heterocyclic group has optionally a substituent selected from a lower alkyl, a lower alkoxycarbonyl and piperidinyl), and a salt thereof.

48. The compound according to claim 13, wherein R^4 is a lower alkyl, and a salt thereof.

49. The compound according to claim 22, wherein R^{16} is a halogen atom, or a lower alkyl having optionally a substituent selected from a halogen atom and hydroxy, and a salt thereof.

50. The compound according to claim 25, wherein R^{16} is a halogen atom, or a lower alkyl having optionally a substituent selected from a halogen atom and hydroxy, and a salt thereof.

51. The compound according to claim 31, wherein R^{16} is a halogen atom, or a lower alkyl having optionally a substituent selected from a halogen atom and hydroxy, and a salt thereof.

52. The compound according to claim 34, wherein R^{16} is a halogen atom, or a lower alkyl having optionally a substituent selected from a halogen atom and hydroxy, and a salt thereof.

53. The compound according to claim 1, wherein W is a group of the formula: $-(CH_2)_p-$ wherein p is an integer of 3 to 5, and the carbon atom of said group is optionally replaced by oxygen atom, sulfur atom, sulfinyl, sulfonyl, or

a group of the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom, a cycloalkyl, or a lower alkyl), and further said $-(CH_2)_p-$ group has optionally 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxy carbonyl, carboxy, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkyl sulfonyloxy-lower alkyl, an azido-lower alkyl, a group of the formula: $\begin{array}{c} \diagup \\ \diagdown \end{array} O$, an amino-carbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxy carbonyl-substituted lower alkoxy, a carboxy-substituted lower alkoxy, an amino-carbonyl-lower alkoxy having optionally a lower alkyl

substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxy-imino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula:

$$\text{R}^{81}-\text{N}-\text{CH}_2\text{COO}- \quad (\text{R}^{81} \text{ is hydrogen atom or a lower alkyl}),$$

hydrazino, pyrrolyl, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, a group of the formula:

$$-\text{O}-\text{A}-\text{CO}-\text{N} \begin{array}{l} \text{R}^{82} \\ \text{R}^{83} \end{array} \quad (\text{A is as defined above, and R}^{82} \text{ and R}^{83} \text{ are the same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R}^{82} \text{ and R}^{83} \text{ may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl}), \text{ and a group of the formula:}$$


$$-(\text{CO})_n-\text{N} \begin{array}{l} \text{R}^{14} \\ \text{R}^{15} \end{array} \quad (\text{wherein n is as defined above, and R}^{14} \text{ and R}^{15}$$

are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a

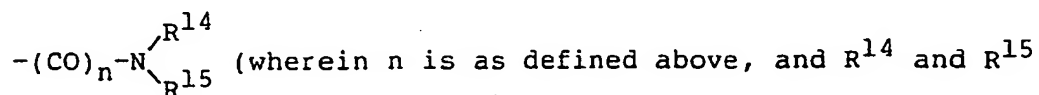
lower alkylsulfonyl, benzoyl, a lower alkoxy carbonyl, anilinocarbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxy carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent on the piperidinyl ring, a halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxy carbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxy carbonyl, or R^{14} and R^{15} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen, wherein the heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl or a lower alkanoyl), and a salt thereof.

54. The compound according to claim 1, wherein W is a group of the formula: $-\text{CH}=\text{CH}-(\text{CH}_2)_q-$ wherein q is an integer of 1 to 3, and the carbon atom of said group is optionally replaced by oxygen atom, sulfur atom, sulfinyl,

sulfonyl, or a group of the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom, a cycloalkyl, or a lower alkyl), and further said

-CH=CH-(CH₂)_q- group has optionally 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxycarbonyl, carboxy, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkyl sulfonyloxy-lower alkyl, an azido-lower alkyl, a group of the formula: , an aminocarbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxy-carbonyl-substituted lower alkoxy, a carboxy-substituted lower alkoxy, an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxy-imino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula:
$$\begin{array}{c} \text{R}^{81} \\ | \\ \text{R}^{81}-\text{N}-\text{CH}_2\text{COO}- \\ | \end{array}$$
 (R⁸¹ is hydrogen atom or a lower alkyl), hydrazino, pyrrolyl, an amino-lower alkanoyloxy having optionally a lower alkyl substituent, a group of the formula:
$$\begin{array}{c} \text{R}^{82} \\ \diagup \\ -\text{O}-\text{A}-\text{CO}-\text{N} \\ \diagdown \\ \text{R}^{83} \end{array}$$
 (A is as defined above, and R⁸² and R⁸³ are the same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R⁸² and R⁸³ may bind together with nitrogen atom to which they

bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl), and a group of the formula:

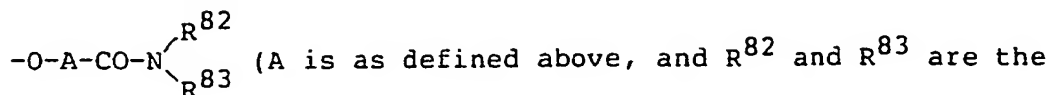


are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, benzoyl, a lower alkoxycarbonyl, anilincarbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxycarbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydropyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent on the piperidinyl ring, a halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxycarbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxycarbonyl, or R^{14} and R^{15} may bind

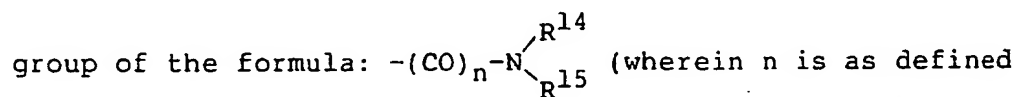
together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen, wherein the heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl or a lower alkanoyl), and a salt thereof.

55. The compound according to claim 53, wherein W is a group of the formula: $-(CH_2)_p-$ (p is an integer of 3 to 5) and said $-(CH_2)_p-$ group has optionally 1 to 3 substituents selected from a lower alkyl having optionally a hydroxy substituent, a lower alkoxy carbonyl, carboxy, hydroxy, oxo, a lower alkanoyloxy having optionally a halogen substituent, an amino-lower alkyl having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a lower alkanoyloxy-substituted lower alkyl, a lower alkyl sulfonyloxy-lower alkyl, an azido-lower alkyl, a group of the formula: $\begin{array}{c} \diagup \\ O \end{array}$, an amino-carbonyloxy having optionally a lower alkyl substituent, a lower alkoxy, a lower alkoxy carbonyl-substituted lower alkoxy, a carboxy-substituted lower alkoxy, an aminocarbonyl-lower alkoxy having optionally a lower alkyl substituent, an amino-lower alkoxy having optionally a substituent selected from a lower alkyl and a lower alkanoyl, a phthalimido-substituted lower alkoxy, hydroxyimino, a lower alkanoyloxy-imino, a lower alkylidene, a halogen atom, azido, sulfoxyimino, a group of the formula: $R^{81}-N-CH_2COO-$ (R^{81} is hydrogen atom or a lower alkyl), hydrazino, pyrrolyl, an amino-lower alkanoyloxy having

optionally a lower alkyl substituent, a group of the formula:



same or different and are each hydrogen atom, a lower alkyl, a carbamoyl-substituted lower alkyl, a hydroxy-substituted lower alkyl, or a pyridyl-lower alkyl, or R^{82} and R^{83} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen, oxygen or sulfur atom wherein the heterocyclic group has optionally a substituent selected from oxo, a lower alkyl, a lower alkanoyl, and carbamoyl), and a



above, and R^{14} and R^{15} are the same or different and are each hydrogen atom, a lower alkyl, a lower alkenyl, a lower alkanoyl, a cycloalkyl, an oxiranyl-substituted lower alkyl, a lower alkyl having 1 to 2 substituents selected from a lower alkoxy, hydroxy and an amino having optionally a lower alkyl substituent, a phenyl-lower alkyl, a pyridyl-lower alkyl, a lower alkylsulfonyl, benzoyl, a lower alkoxycarbonyl, anilino-carbonyl, an aminocarbonyl having optionally a lower alkyl substituent, a cyano-substituted lower alkyl, a lower alkoxy-carbonyl-substituted lower alkyl, a carbamoyl-substituted lower alkyl, a carboxy-substituted lower alkyl, a tetrahydro-pyranyloxy-substituted lower alkyl, a lower alkanoyloxy-substituted lower alkyl, a piperidinyl having optionally a phenyl-lower alkyl substituent on the piperidinyl ring, a

halogen-substituted lower alkanoyl, an imidazolyl-substituted lower alkanoyl, an amino-lower alkanoyl having optionally a substituent selected from a lower alkyl and a lower alkoxy-carbonyl, an aminocarbonyl-lower alkyl having optionally a lower alkyl substituent, or a phenyl-lower alkoxy-carbonyl, or R^{14} and R^{15} may bind together with nitrogen atom to which they bond to form a 5- or 6-membered saturated heterocyclic group with or without being intervened with nitrogen or oxygen, wherein the heterocyclic group may optionally have a substituent selected from a lower alkyl, a phenyl-lower alkyl or a lower alkanoyl), and a salt thereof.

56. The compound according to claim 53, wherein the carbon atom of the group of the formula: $-(CH_2)_p-$ is replaced by oxygen atom, sulfur atom, sulfinyl, sulfonyl, or a group of

the formula: $\begin{array}{c} R^{13} \\ | \\ -N- \end{array}$ (R^{13} is hydrogen atom, a cycloalkyl, or a lower alkyl), and a salt thereof.

57. The compound according to claim 55, wherein p in the group: $-(CH_2)_p-$ is 3 and the group has no substituent, and a salt thereof.

58. The compound according to claim 55, wherein p in the group: $-(CH_2)_p-$ is 3 and the group has a substituent of a group of the formula: $-(CO)_n-\begin{array}{c} R^{14} \\ \diagup \\ N \\ \diagdown \\ R^{15} \end{array}$ (wherein R^{14} , R^{15} , and n is as defined above), and a salt thereof.

59. The compound according to claim 55, wherein p in the group: $-(CH_2)_p-$ is 4 and the group has no substituent, and

a salt thereof.

60. The compound according to claim 55, wherein p in the group: $-(CH_2)_p-$ is 4 and the group has a substituent of a group of the formula: $-(CO)_n-N \begin{smallmatrix} R^{14} \\ R^{15} \end{smallmatrix}$ (wherein R^{14} , R^{15} , and n is as defined above), and a salt thereof.

61. The compound according to claim 55, wherein p in the group: $-(CH_2)_p-$ is 5, and a salt thereof.

62. The compound according to claim 56, wherein p in the group: $-(CH_2)_p-$ is 3 and the carbon atom of this group is replaced by a group of the formula: $\begin{smallmatrix} R^{13} \\ | \\ -N- \end{smallmatrix}$ (wherein R^{13} is as defined above), and a salt thereof.

63. The compound according to claim 56, wherein p in the group: $-(CH_2)_p-$ is 4 and the carbon atom of this group is replaced by a group of the formula: $\begin{smallmatrix} R^{13} \\ | \\ -N- \end{smallmatrix}$ (wherein R^{13} is as defined above), and a salt thereof.

64. The compound according to claim 56, wherein p in the group: $-(CH_2)_p-$ is 5 and the carbon atom of this group is replaced by a group of the formula: $\begin{smallmatrix} R^{13} \\ | \\ -N- \end{smallmatrix}$ (wherein R^{13} is as defined above), and a salt thereof.

65. The compound according to claim 56, wherein the carbon atom of the group: $-(CH_2)_p-$ is replaced by oxygen atom, sulfur atom, sulfinyl, or sulfonyl, and a salt thereof.

66. The compound according to claim 54, wherein q in

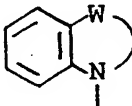
the group: $-\text{CH}=\text{CH}-(\text{CH}_2)_q-$ is 1, and a salt thereof.

67. The compound according to claim 54, wherein q in the group: $-\text{CH}=\text{CH}-(\text{CH}_2)_q-$ is 2, and a salt thereof.

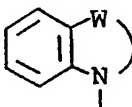
68. The compound according to claim 54, wherein q in the group: $-\text{CH}=\text{CH}-(\text{CH}_2)_q-$ is 3, and a salt thereof.

69. The compound according to claim 58 or 60, wherein n in the substituent: $-(\text{CO})_n-\text{N}(\text{R}^{14})(\text{R}^{15})$ is 0, and R^{14} and R^{15} are

the same or different and are each hydrogen atom, a lower alkyl, or a cycloalkyl, and a salt thereof.

70. The compound according to claim 63 wherein the heterocyclic group of the formula:  is 2,3,4,5-

tetrahydro-1H-1,4-benzodiazepine, and a salt thereof.

71. The compound according to claim 67 wherein the heterocyclic group of the formula:  is 2,3-dihydro-

1H-benzazepine, and a salt thereof.

72. 1-[4-(2-Methylbenzoylamino)benzoyl]-4-methyl-2,3,4,5-tetrahydro-1H-1,4-benzodiazepine.

73. 5-Dimethylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

74. 5-Dimethylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

75. 5-Methylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

76. 5-Cyclopropylamino-1-[2-chloro-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

77. 5-Cyclopropylamino-1-[2-chloro-4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

78. 5-Dimethylamino-1-[2-methyl-4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

79. 4-Dimethylamino-1-[3-methoxy-4-(2-methylbenzoylamino)benzoyl]-1,2,3,4-tetrahydroquinoline.

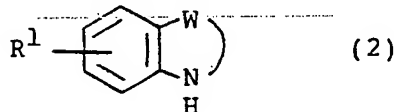
80. 7-Chloro-5-methylamino-1-[4-(2-methylbenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

81. 7-Chloro-5-methylamino-1-[4-(2-chlorobenzoylamino)benzoyl]-2,3,4,5-tetrahydro-1H-benzazepine.

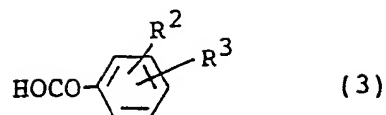
82. A vasopressin antagonistic composition which comprises as an active ingredient a compound of the formula (1) as set forth in claim 1, or a pharmaceutically acceptable salt thereof in admixture with a pharmaceutically acceptable carrier or diluent.

83. A process for preparing a compound of the formula (1) as set forth in claim 1, which comprises the following steps of

(a) reacting a compound of the formula (2):

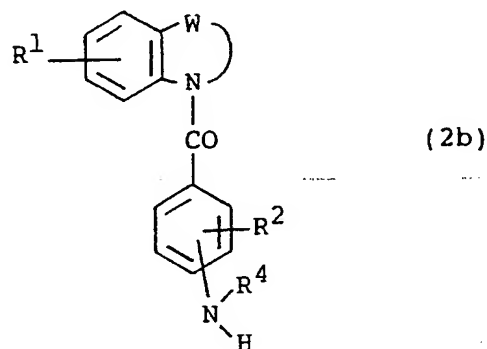


wherein R^1 and W are the same as defined in claim 1, with a compound of the formula (3):



wherein R^2 and R^3 are the same as defined in claim 1, to give a compound of the formula (1),

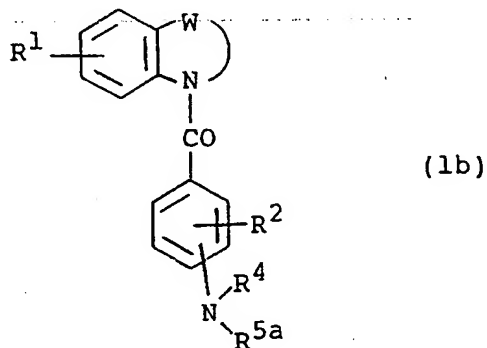
(b) reacting a compound of the formula (2b):



wherein R^1 , R^2 , R^4 and W are as defined in claim 1, with a compound of the formula (4):

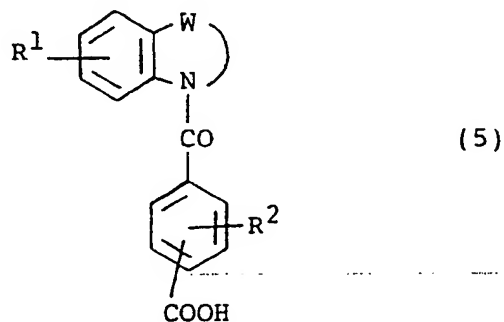


wherein R^{5a} is the same as R^5 as defined in claim 1 except excluding an anilinocarbonyl having optionally a lower alkyl substituent on the phenyl ring, a phenylsulfonyl having optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring and quinolylsulfonyl to give a compound of the formula (1b):

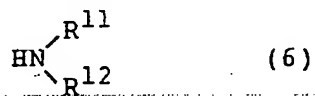


wherein R^1 , R^2 , R^4 and W are as defined in claim 1, and R^{5a} is as defined above,

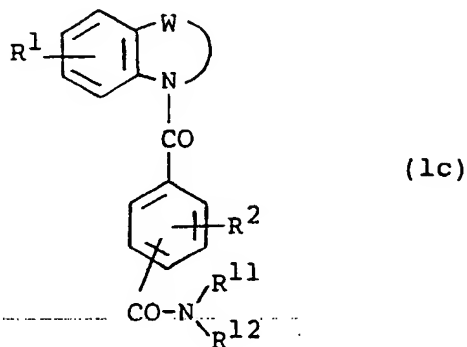
(c) reacting a compound of the formula (5):



wherein R^1 , R^2 , and W are as defined in claim 1, with a compound of the formula (6):

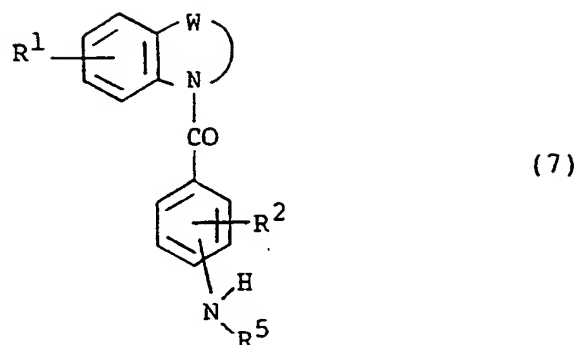


wherein R^{11} and R^{12} are as defined in claim 1, to give a of the formula (1c):

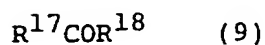


wherein R^1 , R^2 , R^{11} , R^{12} and W are as defined in claim 1,

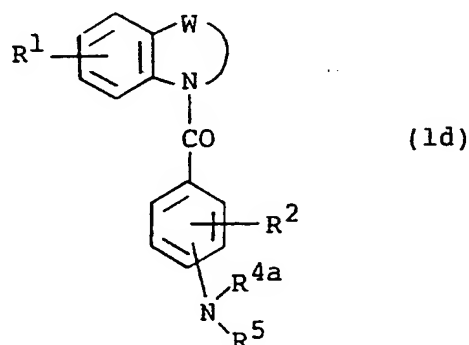
(d) reacting a compound of the formula (7):



wherein R^1 , R^2 , R^5 and W are as defined in claim 1, with a compound of the formula (8) or (9):

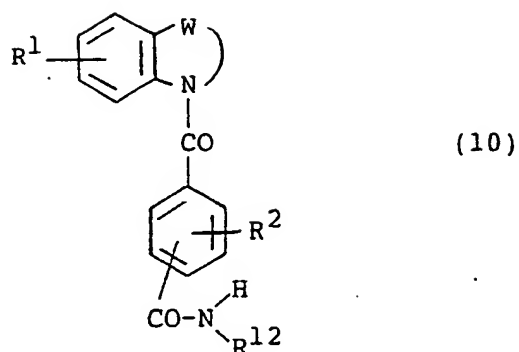


wherein R^{4a} is a lower alkyl, X is a halogen atom, and R^{17} and R^{18} are each hydrogen atom or a lower alkyl, to give a compound of the formula (1d):

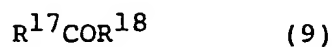


wherein R^1 , R^2 , R^5 and W are as defined in claim 1, and R^{4a} is as defined above,

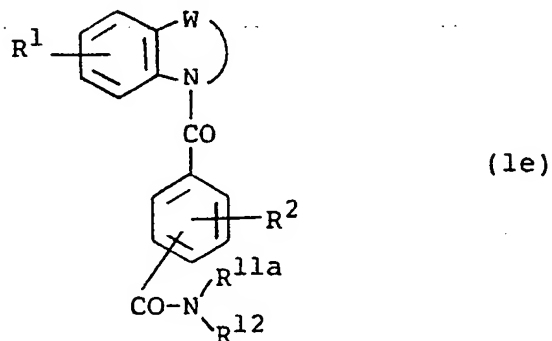
(e) reacting a compound of the formula (10):



wherein R^1 , R^2 , R^{12} , and W are as defined in claim 1, with a compound of the formula (11) or (9):

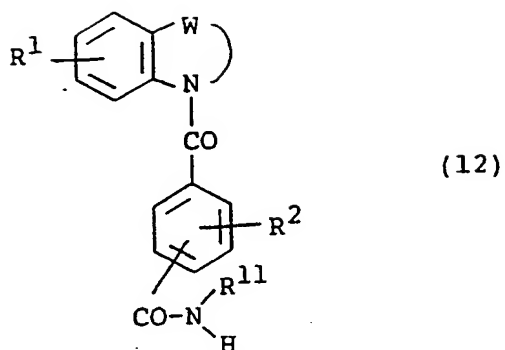


wherein R^{11a} is a lower alkyl, and X , R^{17} and R^{18} are as defined above, to give a compound of the formula (1e):



wherein R^1 , R^2 , R^{12} and W are as defined in claim 1, and R^{11a} is as defined above,

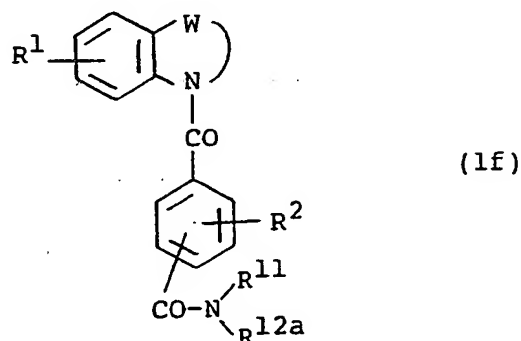
(f) Reacting a compound of the formula (12):



wherein R^1 , R^2 , R^{11} , and W are as defined in claim 1, with a compound of the formula (13):

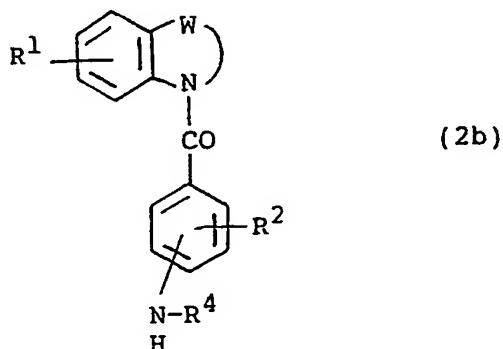


wherein R^{12a} is a cycloalkyl and X is as defined above, to give a compound of the formula (1f):



wherein R^1 , R^2 , R^{11} , and W are as defined above, and R^{12a} is as defined above,

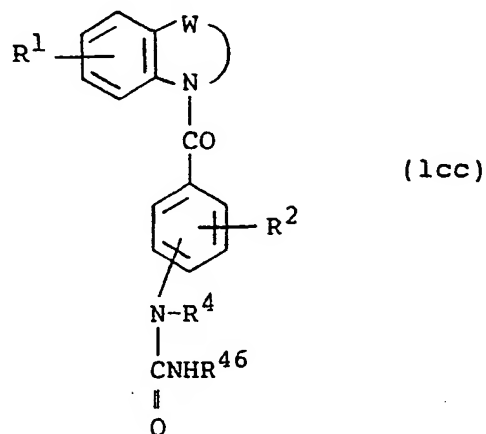
(g) reacting a compound of the formula (2b):



wherein R^1 , R^2 , R^4 , and W are as defined in claim 1, with a compound of the formula (38):

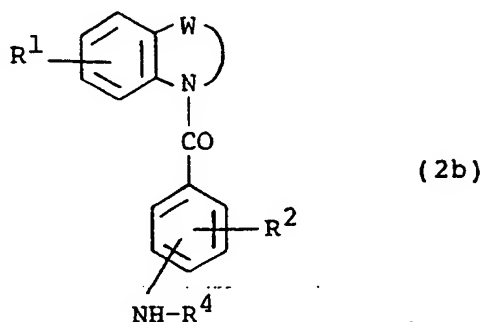


wherein R^{46} is a phenyl having optionally a lower alkyl substituent, to give a compound of the formula (1cc):



wherein R^1 , R^2 , R^4 , and W are as defined in claim 1, and R^{46} is as defined above,

(h) reacting a compound of the formula (2b):

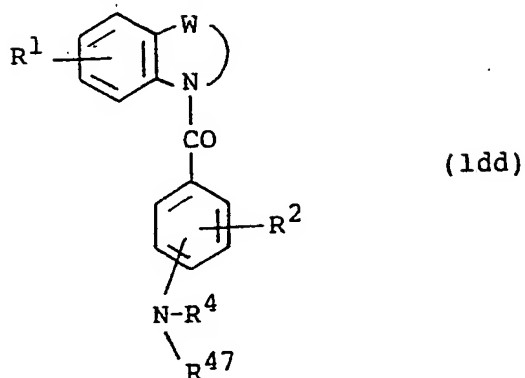


wherein R^1 , R^2 , R^4 , and W are as defined in claim 1, with a compound of the formula (39):



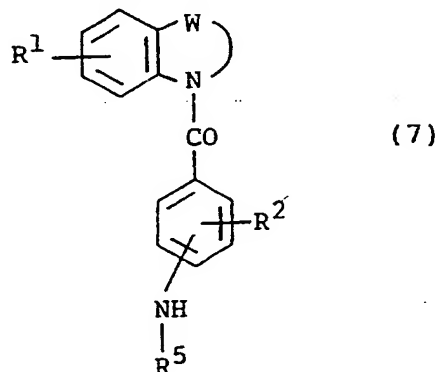
wherein R^{47} is a phenylsulfonyl which has optionally a substituent selected from a halogen atom and a lower alkyl on the phenyl ring, or quinolylsulfonyl, and X is as defined

above, to give a compound of the formula (1dd):



wherein R^1 , R^2 , R^4 , and W are as defined in claim 1, and R^{47} is as defined above, or

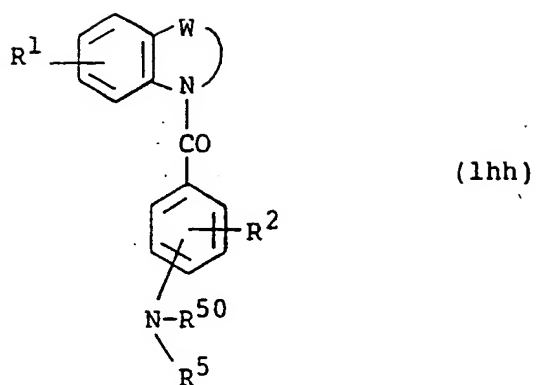
(i) reacting a compound of the formula (7):



wherein R^1 , R^2 , R^5 , and W are as defined in claim 1, with a compound of the formula (42):



wherein R^{50} is a benzoyl having optionally a halogen substituent on the phenyl ring, to give a compound of the formula (1hh):



wherein R^1 , R^2 , R^5 , and W are as defined in claim 1, and R^{50} is as defined above.

Fig. 1

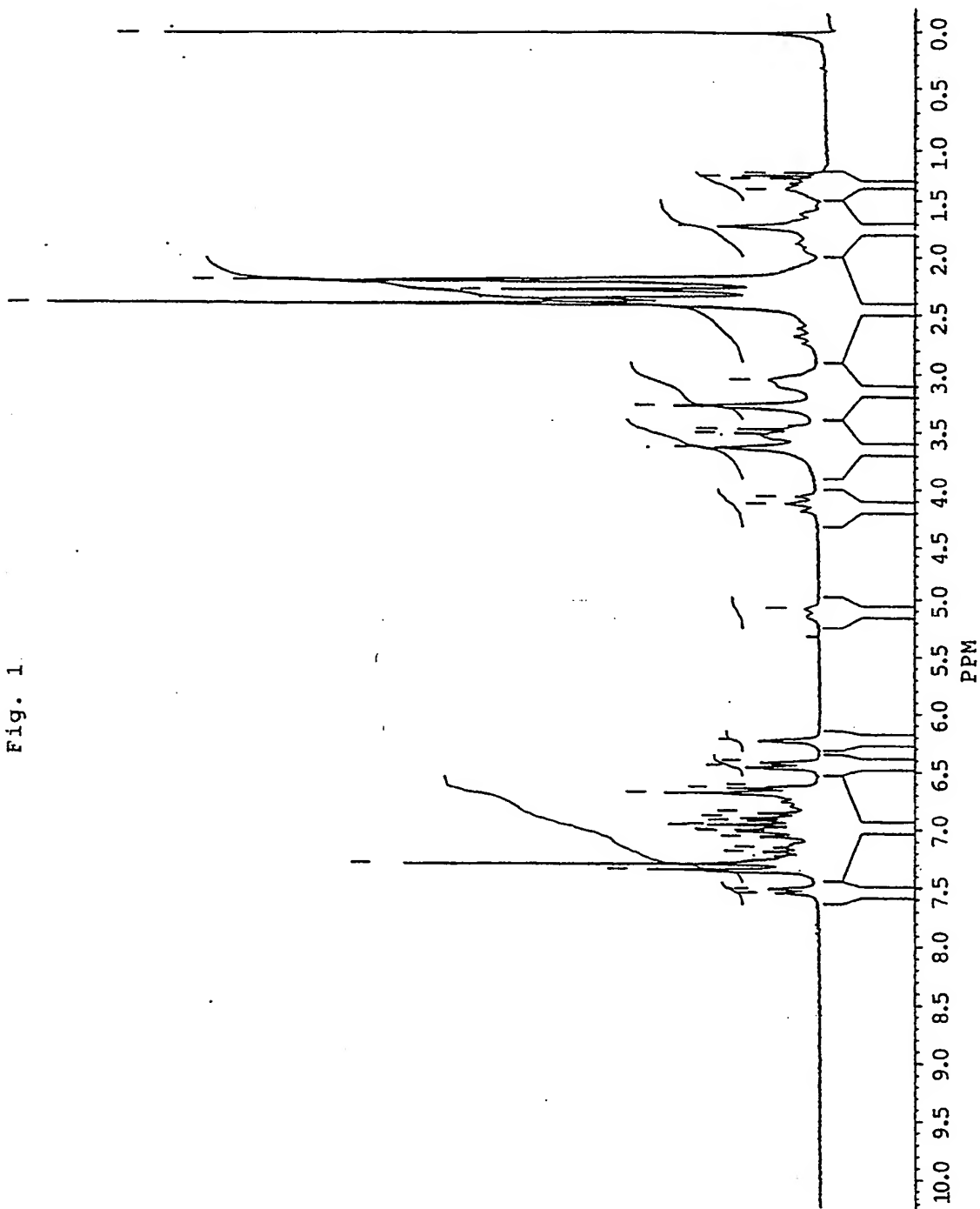


Fig. 2

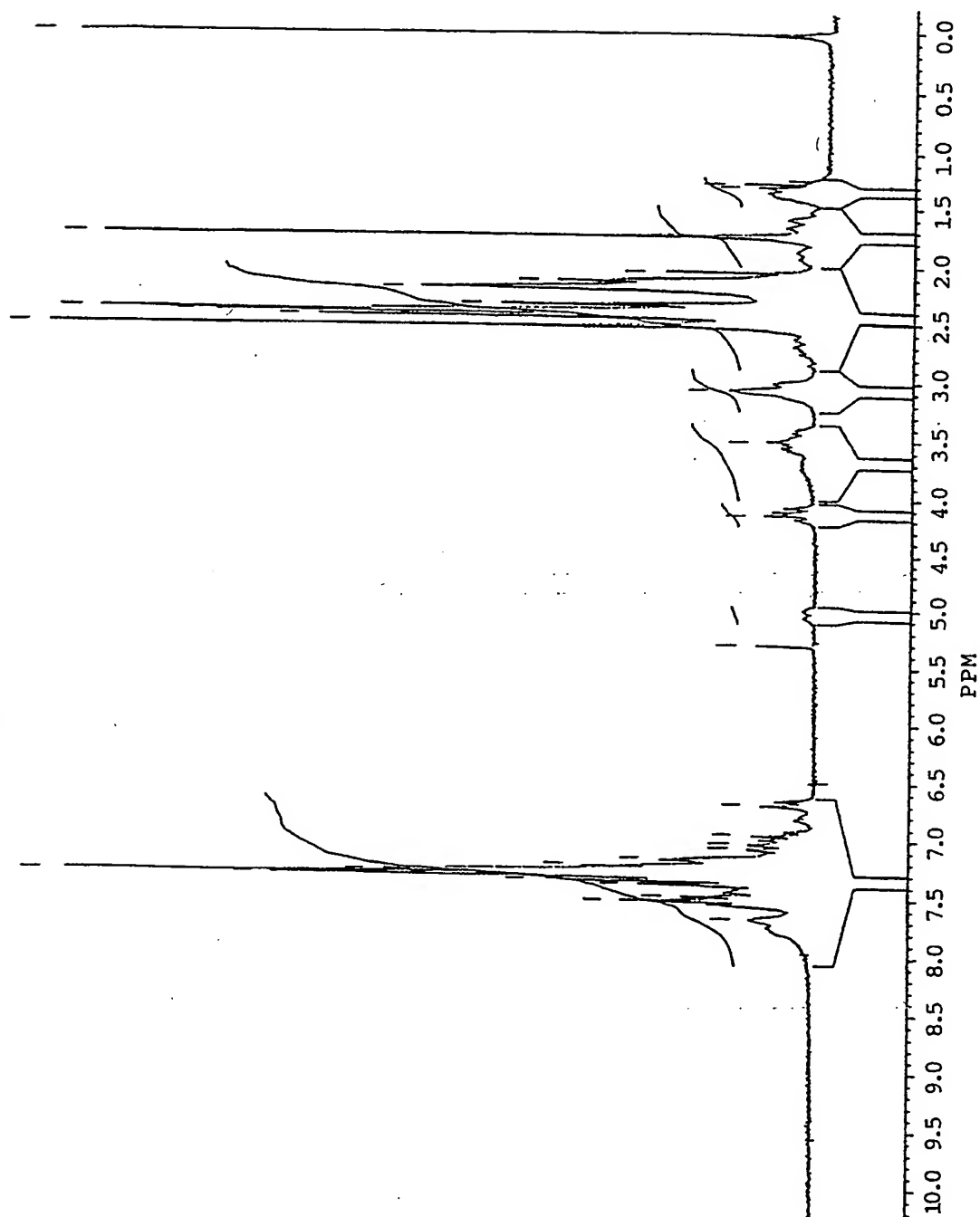
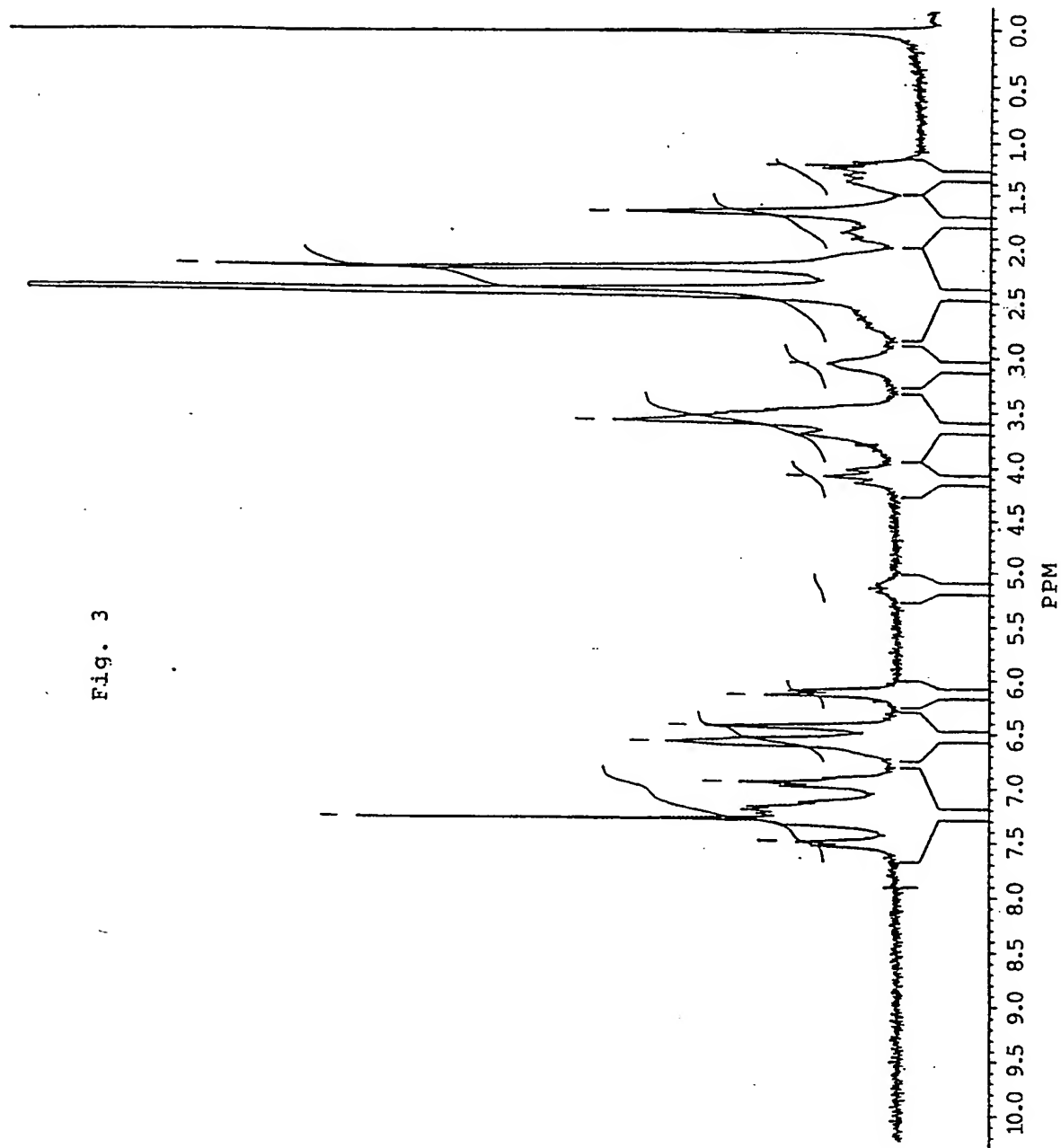
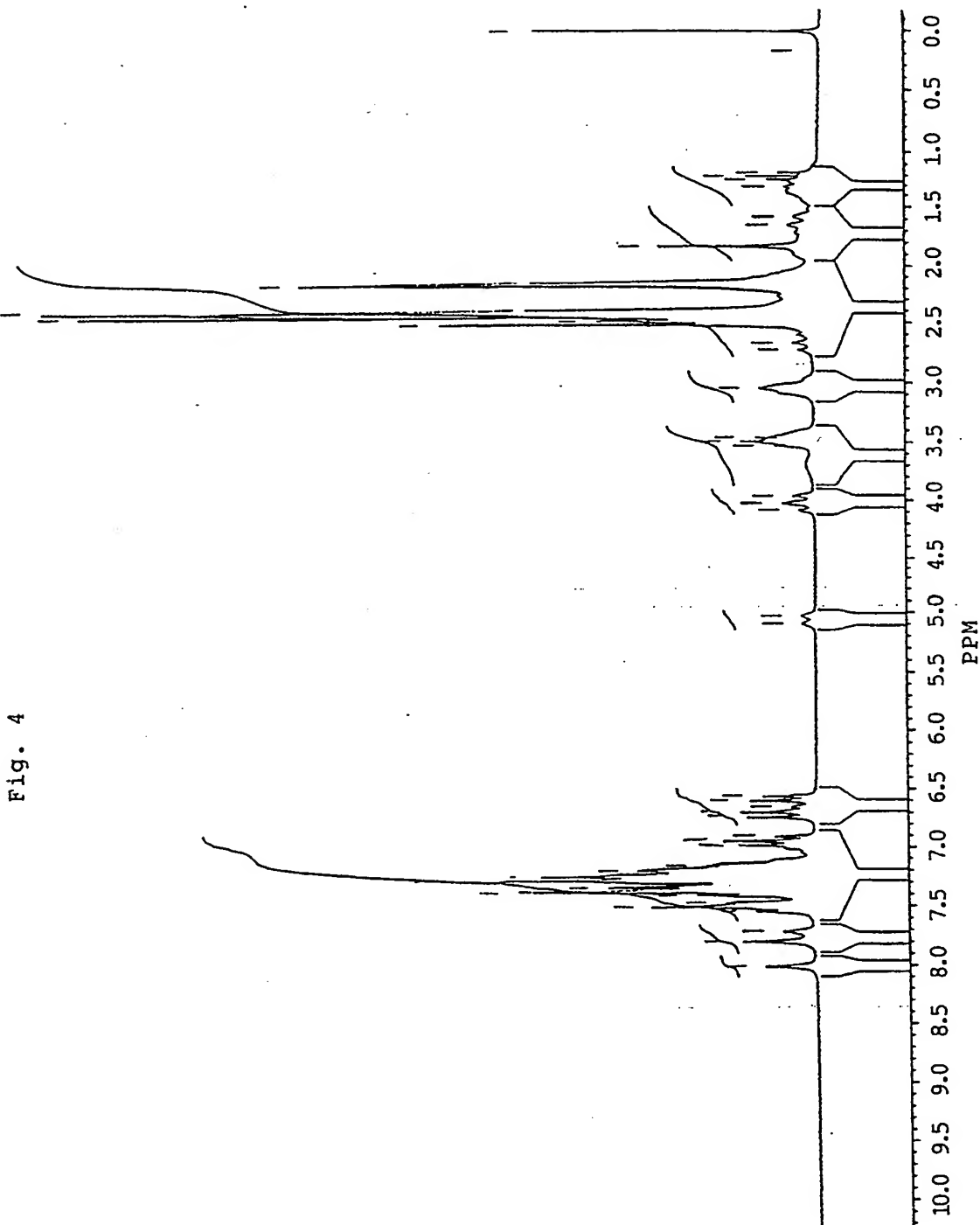


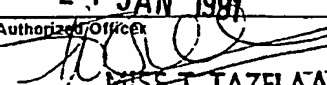
Fig. 3





INTERNATIONAL SEARCH REPORT

International Application No PCT/JP 90/01340

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC IPC5: A 61 K 31/00, C 07 D 215/08, 215/12, 223/16, 225/06, 241/42 243/14, 265/36, 267/14		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC5	A 61 K; C 07 D	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category *	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	US, A, 3458498 (CHARLES M.C. KOO ET AL.) 29 July 1969, see the whole document --	1-83
A	US, A, 4335123 (OTTO GRÄWINGER ET AL.) 15 June 1982, see the whole document --	1,82
A	Chemical Abstracts, volume 102, no. 25, 24 June 1985, (Columbus, Ohio, US), see page 582, abstract 220763r, & JP, A, 6004170 (4-Quinolinone derivatives) 10 January 1985 --	1,82
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>* Special categories of cited documents:¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
3rd January 1991	21 JAN 1991	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	 MISS T. TAZELAAR	

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)		
Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	DE, A, 2314392 (A.H. ROBINS CO. INC.) 27 September 1973, see particularly pages 12, 14 and the claims --	1
A	DE, A, 1906593 (UCB, UNION CHIMIQUE-CHEMISCHE BEDRIJVEN S.A.) 18 September 1969, see the claims --	1
A	DE, A, 1595863 (KNOLL AG) 12 February 1970, see particularly pages 7-8 --	1
A	FR, A, 1405271 (LEPETIT S.P.A.) 4 July 1969, see the whole document -- -----	1

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. ☒ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND INCOMPLETELY SEARCHABLE

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claim numbers 1-71 because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

The scope of the claims 1-71 is so broadly formulated that many compounds of a very wide range of structures are included. The search has thus been limited to the compounds considered to be most relevant.

3. ☐ Claim numbers because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(s).

VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ²

This International Searching Authority found multiple inventions in this international application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

- ☐ The additional search fees were accompanied by applicant's protest.
☐ No protest accompanied the payment of additional search fees.

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO. PCT/JP 90/01340**

SA 41012

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the European Patent Office EDP file on 28/11/90
The European Patent office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 3458498	29/07/69	US-A- 3516987 US-A- 3542760	23/06/70 24/11/70
US-A- 4335123	15/06/82	AT-T- 3422 AU-B- 533484 AU-D- 6179380 CA-A- 1154015 DE-A- 2934609 EP-A-B- 0025864 JP-A- 56034668	15/06/83 24/11/83 05/03/81 20/09/83 12/03/81 01/04/81 06/04/81
DE-A- 2314392	27/09/73	AU-D- 5280373 FR-A- 2182886 JP-A- 49011893	05/09/74 14/12/73 01/02/74
DE-A- 1906593	18/09/69	BE-A- 728220 FR-A- 2001730 GB-A- 1193534 NL-A- 6902057 SE-B- 356746	11/08/69 03/10/69 03/06/70 14/08/69 04/06/73
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FR-A- 1405271	04/07/69	CH-A- 429731 CH-A- 433313 DE-A- 1470008 DE-A- 1470009 FR-E- 94101 GB-A- 1090611 US-A- 3346565	00/00/00 00/00/00 30/01/69 16/01/69 04/07/69 00/00/00 00/00/00

For more details about this annex : see Official Journal of the European patent Office, No. 12/82